ARCHAEOLOGIA:

OR

MISCELLANEOUS TRACTS

RELATING TO

ANTIQUITY.

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PUBLISHED BY THE

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M.DCCCCIII.

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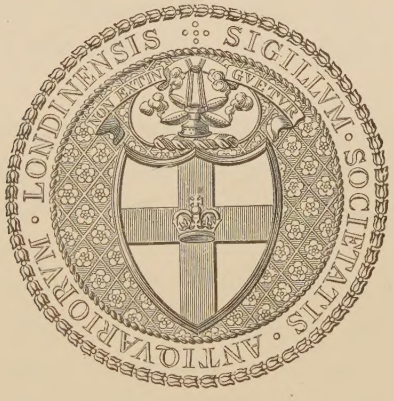

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ADDENDUM AND CORRIGENDUM.

Page 299, line 15 - - For "*tante*" read "*caute*."

By an oversight the name of Mr. F. HAVERFIELD, as responsible for the Map of Roman Britain, was omitted from Plate LVI. of *Archaeologia*, vol. LVII.

XIII.—*Charters of Harmondsworth, Isleworth, Heston, Twickenham, and Hampton-on-Thames.* *By* T. F. Kirby, *Esq.*, *M.A.*, *F.S.A.*

Read 5th February, 1903.

The priory, church, and manor of Harmondsworth, near West Drayton, in Middlesex, with its subinfeudations of Padbury's, Barnard's, and Ludington's, belonged to the Benedictine convent of the Holy Trinity and St. Katherine at Rouen. Who gave them to that house I know not. Tanner[a] merely says that the priory was a cell to the monastery at Rouen, and Dugdale[b] is not more explicit. I see by the presentment of a Middlesex jury in Michaelmas Term, 44 Edward III., that Robert, then prior of Harmondsworth, held the church and two carucates of land by the gift of one (they do not say which) of the king's progenitors by the tenure of distributing weekly amongst the poor of the place three bushels of "wastyl" or best bread. The prior was indicted for that he had failed to distribute the bread during the last twenty years, and he pleaded, with what result does not appear, a charter of Privileges granted to the monks at Rouen by Henry II. and confirmed by Henry III. and Edward I.:

Henricus Dei gracia Rex Anglie dux Normannie et Aquitanie et comes Andigavie archiepiscopis, etc. Salutem. Sciatis nos concessisse et presenti Carta confirmasse Abbati et Monachis Sancte Trinitatis sancteque Katherine de Monte Rothomagensi omnes donaciones elemosinarum terrarum et hominum, que facte sunt eis tam in ecclesiis quam in rebus et possessionibus mundanis. Quare volumus et firmiter precipimus quod dicti Abbas et monachi et ministri eorum teneant et habeant omnes elemosinas et possessiones suos cum sacha et sacca et thol et theam et Infangenepief cum omnibus libertatibus et liberis consuetudinibus et quietanciis suis in bosco et plano et pratis et pasturis in mariscis et piscariis in

[a] *Notitia Monastica*, Middlesex, iii.

[b] *Monasticon Anglicanum*, vi. 1057.

vivariis et stagnis. In aquis et molendinis. In virgultis et grangiis extra burgum et infra. In viis et semitis et in omnibus aliis rebus et aliis locis quietas liberas et solutas. de Sirra. et de hundredo et placitis et querelis et de murdro et de wapentacha et scutagio et geldis et danegeldis. et assisis. et hidagiis. et de operacionibus pontium. et Castellorum et de Lerwite et de Hengewite et fleamcameswite. et de Blodewite et de fithwite. et de auerpeny. et hundredespeny et de Wardepeny. et quietas de omni Pontagio thelonio et passagio et lestagio et stalagio et de omni servicio seculari et servili opere et exaccione et de omnibus occasionibus et secularibus consuetudinibus. excepta sola justicia mortis et membrorum.

Hec omnia concessimus dictis abbati et monachis in puram et perpetuam elemosinam pro Dei amore et animabus omnium antecessorum et successorum nostrorum.

Testibus: R. Rothomagensi archiepiscopo; E. episcopo Ebroicensi.[a]

The prior tells us in his plea that his priory is a cell to the convent at Rouen; and that he is one of the brethren of it, appointed by the abbot and removable at his pleasure, *dativus et remotivus*.

In the year 1390 the priory was in the hands of the king in common with the other alien priories. Robert de Beauchamp, late prior, was custodian of it, and eighty marks was the *firma*, or rent which he had to render to the crown. In that year William of Wykeham presented petitions to Pope Urban VI., praying that licences might be granted to religious houses abroad to annex lands in England to one or other of his colleges, and that the Bishop of Hereford (John Trefnant, 1389-1404) and the Bishop of Rochester (William de Botelesham, 1389-1400) might be appointed commissioners to expedite such transactions. He also applied for a licence to annex to his college at Winchester the churches of Isleworth, Heston, Twickenham, and Hampton-on-Thames, the churches of Hamble, Hound, and West Worldham, and the manor of Harmondsworth; and later on, asked that he might be allowed to acquire for his colleges lands in England owned by religious houses abroad, to the value of 500 marks per annum:

Item cum huiusmodi duo Collegia adhuc in redditibus deficiant, cum ex illis custodes, scolares et alie persone degentes in ipsis, ut prefertur, congrue nequeant sustentari, supplicat s. v. dictus episcopus, quatenus ei de bonis ad eum racione sue persone spectantibus, necnon collegiis antedictis emendi et acquirendi a scismaticis[b] religiosis, hospitalariis, aliisque

[a] These witnesses were Rotrocus de Warwick, archbishop of Rouen 1165-83, and Egidius de Perche, bishop of Evreux 1170-79.

[b] The French religious houses were branded as schismatic, because they sided with Clement VII. the pope at Avignon, whereas Parliament had decided in 1378 by stat. 2 Richard II. 1, cap. 5, that Urban VI. was rightly chosen pope, or bishop of Rome, as another reading of the statute hath it.

personis ecclesiasticis, exemptis et non exemptis, extra dictum regnum Anglie consistentibus, alia maneria, terras, grangias, possessiones, et bona mobilia et immobilia qualiacunque infra dictum regnum Anglie consistencia usque ad valorem annuum quingentarum marcarum pro quolibet ipsorum Collegiorum; et ecclesiis religiosis et personis, ad quorum monasteria, ecclesias, seu loca pertinent huiusmodi maneria etc vendicacionem et alienacionem illorum faciendi, licenciam concedere dignemini graciose cum clausulis ut supra etc. *Et signantur per fiat, ut petitur, ut supra.*

Having thus obtained the pope's fiat Wykeham sued out a crown licence, enabling his college at Winchester to acquire and hold property of alien priories to the value of 200 marks per annum. This licence was tested at Westminster, 16th June, 13 Richard II. (1390), and has a perfect example of the great seal in white wax attached to it.

No. 22 is a contemporaneous copy of a crown licence granted 10th March, 14 Richard II., to the abbot and convent at Rouen, enabling them to grant Harmondsworth to the college at Winchester, and the manor and church of Tingewick, Bucks, with the churches of Saham Tony, Norfolk, and St. Leonard's, Sussex, to New College, Oxford.

At the foot of this document will be seen: "Conclusio brevis de exonerando manerium de Hermondesworth," a copy of a writ exonerating, as from the 28th March, 1392, Robert de Beauchamp from the fee farm rent of 80 marks already referred to.

Below are some instructions in another hand, which the late Mr. W. H. Gunner, one of our Fellows, thought to be the hand of Wykeham himself. It must have been dictated by him, if this be not the case:

Rogamus vos specialiter et ex corde quod postquam carta originalis fuerit semel in Scaccario ostensa postea ista copia uti et illam ostendere velitis in communicando cum consilio nostro, et cum Baronibus Remembratoribus et clericis de Scaccario et aliis, et servare cartam principalem sigillatam sigillo Domini Regis sanam et integram et absque dicte carte deturpacione seu sigilli regis eiusdem lesione. *Et ista copia concordat cum originali.*[a] Et faciatis quod breve de exonerando irrotuletur et quod habeamus numerum rotuli in quo dictum breve irrotulabitur et terminum.

Wykeham then sent his private secretary [*domicellus*], one Richard Altringham, to Rouen to negotiate. The result was an agreement to purchase Harmondsworth and Tingewick for the sum of 8,400 francs or gold écus:

[a] These words in a larger hand than the rest.

De bon or de bon aley de bon pois et du Coing du Roy de France. Ces quiex huit mille et quatre cens frans dor dessus diz les deux cens seront pour le convent dudit lieu, pour acheter rentes perpetuelles a ce que ledit monsire levesque soit perpetuelment mis in prieres dudit convent. Item deux cens frans seront pour la chambre dudit abbe, pour emploier au prousfit et gouvernement dudit lieu. Item ledit monsire levesque trouvera et ennoiera une bonne chapelle fournie de ce qui y' appartient a tel Seigneur come il est pour le grant austel dudit lieu pour servir la Glorieuse Trinite, en nom de la quelle leur eglise est fondea. Item ledit monsire levesque trouvera a damp Robert de Beauchamp et a damp Johan le Cellier son compaignon demourons en engletere es manoirs dessus diz, Tant comme il vivront leur vivre de boire et de mengier vestir et chauchier, et tontes autres choses qui leur seront neccesaires pour leur vie avoir et leurs corps soustenir, comme il appartient a avoir aus Religieux de leur estat.

This agreement was made at Rouen, at the house of St. Katherine, on Wednesday, 23rd November, 1390. I have here an exemplification under the official seal of the provost of Paris, dated 26th July, 1392, of a licence by the vicar-general of Guillermus, archbishop of Rouen, ratifying the alienation. The seal is of dark green wax, 2 inches in diameter, with a large fleur-de-lys between, in base, a shield of France impaling Champagne and a triple-towered castle. The legend is:

[✠ SIG]ILLVM [PRÆ]POSITVRÆ PAR . . . .

There is also a small round counterseal, but defaced by pressure. The seal is now in two pieces, but the instrument is worth looking at as a sample of French handwriting of that period.

The next document is a letter of attorney, under Wykeham's episcopal seal, appointing Nicholas Stoket and John Ware, clerks, and Richard Altryncham, to receive on his behalf seisin of his purchase, and see to the payment of the purchase money, which was remitted through some firms of financiers at Genoa and Lucca.[a] It is dated at Esher, 9th June, 1392, and attested by John de Swafham, a notary of the apostolic see often employed by Wykeham, whose mark is given at its foot.

The bishop's seal is a fine impression in green wax, but damaged at the top. It is protected by a paper guard.

[a] Emanuel Zakarie, George Cigala, and John Catane "de societate de Cathaneis de Janua": Bartholomew Benchenensis and Ghyno Bartholomew "de societate de Guynise de Luk'": and Anglius Ceba "de societate de Lomelyne": and Terame Catane "de societate de Grylle" of Genoa.

Next comes the grant by the abbot and convent "de licencia illustrissimi Principis et domini domini Ricardi Regis Anglie secundi," dated 15th October, 1391. It is in good preservation, and a contemporaneous wag has improved the initial S by inserting in its flourish the likenesses of a mitred bishop (very like the caricatures of Lord Chancellor Brougham), a good-looking layman, and a dolphin.

The official seals of the abbot and the convent are both perfect, in dark green wax. That of the convent is a pointed oval $2\frac{5}{8}$ inches long, bearing the usual representation of the Holy Trinity, with the marginal legend:

✣ S' ꝺONUꝺNTUS : SC̄Ꝺ : TꝺRNITATIS : IN : ꝏONTꝺ : SCꝺ : KATꝺRINꝺ : ROTHOꝏ.

The abbot's seal represents him standing in mass vestments with crosier and book. On either side is a fleur-de-lys in a lozenge. The legend is:

✣ S IOHIS ABB̄IS SANCTꝺ TꝺRNITATIS IN ꝏONTꝺ SCꝺ
KATꝺRINꝺ PROPꝺ ROTH.

The two seals seem to be the work of the same engraver.

The next document is a release, bearing the same seals, both of which are perfect, and an elaborate initial letter.

Then we have an acquittance for the purchase money, 8,600 francs, dated 25th October, 1391, with the same seals, also perfect; and an acquittance under the abbot's seal only, of the same date, for "summam quadraginta librarum Tournencium pro viagio fratris Johannis Fecourt monachi nostri ac Prioris Prioratus de Bisiaco in Anglia facto."

The churches of Isleworth, Heston, Twickenham, and Hampton-on-Thames were purchased of the monks of St. Valery, in Picardy, and were conveyed to Winchester College in 1391. The conveyance is beautifully written, and both the seals appended to it are perfect, and of dark green wax. The chapter seal is a pointed oval, 3 inches long, of early twelfth-century date, with a seated figure of an abbot in mass vestments, holding a crosier in his left hand and a book in his right. The legend, which begins with a representation of the Holy Dove, is:

SIꝺILLVM CAPITVLI ꝺCCLꝺSIꝺ SC̄I WALꝺRICI.

The abbot's seal is also a pointed oval, $3\frac{1}{8}$ inches long. It represents a mitred abbot standing under an elaborate canopy and giving the blessing. In

base are two shields, with a fleur-de-lys between. The dexter bears the arms of the abbey: France, with a crosier on an escutcheon of pretence. The sinister has the abbot's own arms, three escutcheons and a label of three points (Boubers).

The Archbishop of Rouen and the Bishop of Evreux were attesting witnesses.

The purchase was completed 14th June, 1391, at an inn at Boulogne, "in hospicio honesti viri Aliani de Kawdebroune domicelli in suburbio Bolonie," where Stoket, Ware, and Altringham paid the purchase money and gave an undertaking to pay John Carpenter, treasurer of the convent, a further 200 francs at St. Peter-ad-Vincula (1st August) then next. This undertaking is evidenced by a notarial act under the hand of John Arnold.[a]

Here is John Carpenter's acquittance for 750 francs "pro meis laboribus circa negocium alienacionis possessionum monasterii predicti in Angliâ;" and here is another acquittance of his for another 200 francs for the fixtures and property of the churches. The seal which is appended to each document is in red wax and fairly perfect. It is a pointed oval, $1\frac{1}{2}$ inch long where whole, with the figure of an abbot in mass vestments and holding a crosier, on a cross hatched ground. Legend:

✷ SIGILLV̄ THȻSAVRII SC̄I WALARICI

The seal is of thirteenth-century date.

And here is another acquittance, of same date, by the Prior, John de Jonnalle, for 550 francs for his trouble in negotiating the sale. His seal is circular, in same red wax, 1 inch across, but much broken. It bears a shield of the abbey arms, France with a crosier on an escutcheon of pretence, with the legend:

✢ S'AS ȻAVS' DȻLȻ IVSTIȻHȻ DȻ LȻȢLISȻ S'WALȻRI

And here is a receipt by John Carpenter, the treasurer, for 200 francs, his share of the plunder. The seal is that of the treasurer of the abbey, as before.

The last of the series of acquittances is a joint one by the prior and Carpenter for 300 francs, of which each monk (number not stated) was to receive ten francs, and Carpenter the rest.

The total purchase money was therefore 2,000 francs, of which Carpenter got the lion's share. Apparently the abbot got none of it, possibly because there

[a] A notary residing in Kingsgate Street, Winchester, who seems to have accompanied Stoket, Ware, and Altringham as their legal adviser.

were estates appropriated to his maintenance, of which this was not one. The seals of the abbey *ad causas* and of the treasurer are appended.

All these payments at Boulogne were sanctioned by a privy seal dated 26th April, 14 Richard II., 1391, licensing Wykeham to send money out of the realm for his purchases by cash remittances or bills of exchange:

Per quascunque personas sibi placuerit licite valeat mittere, de tempore in tempus, quando et quociens voluerit, tam in moneta auri vel argenti, quam per excambium, tot summas pecuniarum quot sibi placuerit, et prout eidem episcopo indiguerit, pro solucione adquisicionum predictarum, ac eciam pro omnibus aliis custubus ex causa predicta faciendis, prout eidem episcopo melius videbitur expedire. Et preter hoc concessimus, quod mercatores indigene et alienigene, cuiuscunque nacionis existant, licite facere et mittere valeant ultra mare literas cambitorias omnium summarum predictarum, de tempore in tempus, prout indiguerit, et prout ipsi per predictum episcopum ex causa predicta fuerint requisiti, sine occasione vel impedimento nostri vel heredum nostrorum, seu ministrorum nostrorum quorumcunque, aliquo statuto seu ordinacione incontrarium facta non obstante.[a]

I exhibit for the sake of the seal, which is almost perfect, the counterpart of a lease of the rectory of Isleworth, granted 25th June, 33 Henry VI., to John Bokyngham, prior of the house of Jesus of Bethlehem, of Sheen. The seal of Sheen priory is a pointed oval one, in red wax, $1\frac{7}{8}$ inches long. The subject is the Adoration by the Shepherds of the Infant Christ, who is shown lying in a manger, with the Blessed Virgin Mother on one side and the ox and the ass behind. The legend is:

S' coe domus ihu xpi de bethlem ordinis cartuf' in shene.

And here is an original lease granted 25th June, 13 Henry VI., to the same prior, which must have been given up on a renewal. The Winchester College seal is all but perfect, red wax.

Harmondsworth proved a valuable acquisition, although the repairs of chancels came heavy at first. The college kept the manor farm in their own hands and managed it by a serjeant or bailiff, relying for labour on the duty work of a multitude of customary or free tenants of the manor, as well as the enforced services of cotters and "native" or bond-tenants—a burden against which the customary tenants struck in the year 1461, when their services were commuted for money payments. Traces of commutations of this kind appear earlier.

[a] The exportation of gold and silver, except for the payment of the king's garrisons over the seas, had been forbidden since 1381 by 5 Richard II., stat. 1, c. 2.

Out of a number of computus rolls existing at Winchester College I am only going to refer to one, that of Thomas Lane, serjeant of Harmondsworth, for the year ending at Michaelmas, 22 Richard II. (1399). It is in Latin, of course. I am giving it in English and cutting it short :

	£	s.	d.
Arrears	32	15	8
Rents of assize for Harmondsworth Subbestone [a] Southcote and Longeford,[b] £22 8 11½ and Risslepe (Ruislip) 27/6	23	16	5½

Firma.

Rent of fishing in river let to William Heldare except a moiety of the mill pond (de la Poule) reserved for warden of the College and other visitors, 28/-, rent of mill demised to William Flemyng for five years, £6 13 4 . . £8 1 4

Pensions.

Twenty shillings issuing out of church of Hestyng (Heston) and forty shillings issuing out of church of Saham Tony, not received these six years.

Venditio operum.

Three shillings and fourpence of Godfrey atte Purye in lieu of so many days duty work as arranged with abbot and convent of St. Katherine; and two shillings and three pence in lieu of 18 days "manualia opera" at 1½[d] . 0 5 7

Exitus Manerii.

Sixteen shillings and five pence half penny customary pannage of swine at Martinmas, one penny for every head over one year and a half penny for every head under: 7/8 for skins of one horse, two oxen and three cows that died: 22[d] for eleven lambskins with the wool on, and 16[d] for sixteen clipped skins of lambs that died or were killed: Nothing for apples in garden, because none this year: 2/- for grass of two acres in Colebroke [c] and nothing for grass of the acre in "la Wereyte" because it is reserved to the lord's beasts: 3[s]/4[d] of ds. de la Poule for water taken from the river: 17/- for 34 dozen pigeons: nothing for turf (morercha) sold from the moor: nothing for osiers (virgæ, "rods") up to 10,000 because the right to cut that number is let with the fishing: 2/- of the minister of Hounslow, Peter Hermondesworth and

[a] Now Sipson, a hamlet three-quarters of a mile east of Harmondsworth. *Cf.* Ebbesham, now Epsom.

[b] Now Longford, a hamlet on Bath road, half a mile south-west of Harmondsworth.

[c] Colnbrook, two miles south-west of Harmondsworth.

William Chychely for turves cut in the moor to mend the weirs (les wares) of their mills: 12d for tithe of hemp: 7/1 for 85 gallons ale from "Tolfystre" viz. a gallon out of every brewing at 1d: 60/- for assignments of timber (de tallio custumario) no beech or lop sold this year:[a] 2s/4d for hay sold off ten acres: 21d for profits of late Amice Robinet's cottage while in Lords' hands over and above the quit rent:[b] 12d for heath and 13/4 for straw sold: £7 11 8 for dairy (lactagium) of 26 cows and their calves, and 2/8 for rent of two cows let to William Cauche:[c] 35/- for thirty stone of wool sold at 14d the stone of eight lbs. £16 6 5½

Venditio frumenti.

£46 8 10½ for wheat at prices varying from 6/8 to 5/8: £35 12 2¼ for barley at prices varying from 6/8 to 5/8: and 47/2½ for "haras" (probably pulsē) at 7/4 the quarter £84 8 3¼

Venditio stauri.

3s/4d for horse past work (debilis): 2/- for another: 50/- for five oxen at different prices: 38/7 for six worn-out cows at from 11/- to 6/6 each: 2/6 for a boar, and 66/8 for two sows and thirty-seven pigs supplied to Winchester College: 2/6 for pig sold at market: 6/- for 18 geese, and 13/4 for 40 capons, all at 4d each: 12s for 200 hens' eggs and 2/4 for a cygnet . . . £9 18 3

H. in denariis (heriots in money).

3s/4d for heriot of Henry Drayton and Isabel his wife: 12d value of heriot of John Bodmyn; 2/- value of sword, the heriot of William Reynolds: 3s/4d value of heriot of Thomas Pompe[d] 9 8

Perquisita.

57/3 at Court held on Wednesday next after Conception B. V. M. (Dec. 8): 31/8 at Court held May 3d, including fees 4 8 11

[a] The right of customary tenants to timber for repairs was limited in this and most other manors by a custom allowing it to be taken by assignment of the steward only, as a check upon waste. The 60*s.* here represents fees paid by tenants for such assignments.

[b] The lords of the manor appear to have entered on her death and taken the profits, pending the admission of the next taker.

[c] A custom of letting a dairy of cows at a yearly rent of so much per cow still obtains in many parts, and is common in Wilts and Dorset.

[d] The lords took the best chattel of a tenant as a heriot on his death. In the case of the Draytons, it was compounded for by a money payment, in the other cases the thing seized seems to have been redeemed at a valuation.

Super computum. . . . . . 5 17 $8\frac{3}{4}$
Sum total of receipts with arrears 186 8 4

Resolutio redditûs.

Repaid lord of Drayton for turves dug in his manor, 2/ : Short on sundry rents received, 1/10 . . . . . 3 10

Custus carucarum.

Iron and maple[a] for three ploughs, 8/4 : three iron shoes and nails for same, 18^d : shoeing four horses and three oxen for cart as well as plough,[b] 12/. The smith also shod the forefeet of two horses *gratis* with his own iron, according to the custom. Sole pieces and "chips" to a plough and putting it together (in caruca chippanda et vestienda), 6^d : one plough-wheel 10^d : two pairs of measuring tapes (acrestrenges), 6^d: smith's wages making two ploughs, 6/2: two yokes, 8^d: new plough bought, 13^d: binding same with iron, 3^d: harness, 4^d 32/2

Custus carectarum.

Four pairs of cartwheels, 18/-: clouts[c] and nails, $3/6^d$: four axletrees, 2/6 : greasing same, 12^d: three horse collars, 2/6 : two pairs of traces, 15^d: a cart-rope, 18^d: a cart-saddle with pack (sella carectaria cum basso), $13\frac{1}{2}^d$: one old horse collar, 8^d : hooping two pairs of buckets with wooden hoops, 4^d : girths, cruppers (rerecordes) and "whippecordes," 6^d : nine headstalls, 9^d: three iron hurturs,[d] 12^d . . . . . $34/7\frac{1}{2}$

Emptio frumenti et stauri.

Five quarters, four and a half bushels of oats at $3^s/4^d$, $18\text{-}6\frac{1}{2}$: a horse, 22^s: two oxen, 25/8 : two more, 26/8 : a cow, 11/-: a bull, 9/6 : a goose & four ganders, 2/6 . . . . . $115/10\frac{1}{2}$

Custus domorum cum necessariis.

Carpenter mending beam in porch of barn, fixing groundsill and new studding[e] two of the bays, $3^s/4^d$: 7550 tiles for porch, 37/9, and 1 qr. 3 bus.

[a] This is the indigenous *acer campestre* or wild maple, so common in hedgerows. The wood is fine grained and tough, but of no great size.

[b] Oxen used for ploughing were shod on their forefeet only.

[c] Iron plates, each going half way round that part of an axle which works within the stock of a wheel. *English Dialect Dictionary*, i. 162.

[d] Hurturs are the shoulders of an axle against which the wheel rubs. *English Dialect Dictionary*, iii. 291.

[e] "Studs" are upright pieces of timber morticed into the groundsill, on which weatherboard is now and "wattle and dab" was formerly laid.

lime, 2/-: cartage of tiles & lime in own carts, four journeys, 12d: four bushels of oats for the horses, 20d: 700 laths for roof of porch & small building next granary, 3/6: 5000 lath nails at 14d, 5/10: 250 hip tiles, (hepetiell) gutter tiles (gotertiell) and ridge tiles (ryggetiell) to repair ridges and gutters of roofs of porch and small building, making good other defects, and tiling wall between building and north end of the hall, 12/6: making said wall of mud, as per contract, 5/9: carting the tiles from Watford in lords' own cart, and paid for 4 bushels of slack lime, 12d: expenses of serjeant riding hither and thither on these matters, 8d: tilers roofing porch and building and making good damage by tempest under contract, 26/4: groundsill for carthouse, a contract, 5/-: 200 laths to its roof, 12d: a thousand more, 14d: two bushels of tile pins, 16d: procuring same from London, 3d: thatcher coating roof of large barn, own straw, two days, 12d: his man (servitor) same time, 3d: thatching mow of pulse (magnum mullonem de puls) five days, 2/6: his man, 10d: three men cutting weeds in river by the highway between Longeforde and Colebroke, and between Highebrygge and Lowegate, to save the lords' meadow from being flooded, a contract, 3/-: making twelve quarters of malt, 2/-: doctoring pigs, 12d: a winnowing fan to winnow lords' corn, 16d: parchment for this roll, 16d: washing and shearing sheep, 3/0: tar & ointment for them, 3/8: ruddle, 6d: servants at Court house for their oblations at Christmas and Easter, 20d: spars for thatching, 10d £6 13 9

Custus molendinorum.

Two carpenters at work eight days mending base of mill (le mulbede), its top (la copis) the cogwheel, the waterwheel, a bridge, a beam, and making one new 'sporles,' each at 6d a day, 8/: four planks, 14d: one 'ryne' one 'spyndele' and eight stirrups, part of old and part of new iron, 5/10: bought cask (dolium) to make hopper, 2/3: two coopers making same two days, 20d: four hoops, 8d: nails, 2d 19/9

Custus cancelli.

Nine lbs. wax for tapers and candles at 7d, 5/3: making them, 4½: two carpenters two days and a half on new door in chancel, 2/6: five 'estrychbordes'[a] for same, 20d: two hinges, 18d: one hundred white spikenails, 2/6 . . 13/9½

Trita et ventilata.

Two hundred and forty-five quarters of wheat and 3 qrs. 3 bus. of curall[b]

[a] This word is not in English Dialect Dictionary. I find "Estregbordes, tabulæ abiegnæ" in Ducange. If these boards were really Norway deals, it is an early instance of the use of that material in England. Our Fellow, Mr. W. H. Richardson, refers me to Cowell's Interpreter: "Estreg-bords. Eastern boards or deal or firs, brought from the Eastern parts for wainscot and other uses."

[b] Coralls or dross, an inferior sample of wheat, separated from the rest by dressing.

at 4^{d}, £4 2 9¼ : 173 qrs. of barley at 3^{d}, 43/3 : 18 qrs. of "haras" at 3^{d}, 4/6 : 6 qrs. 3 bus. of oats at 2^{d}, 12¾^{d} 6 11 7½

Sarculatio et falcatio.

Hoeing the wheat this year because the customary tenants hoe it every third year, and this is not the year, 5/8 : mowing Burymede, nothing, because the customary tenants mowed it : paid for their nooning (meridiatio) as the custom is, 13^{d} : two acres called Stockeresmede mowed by customary tenants, as the usage is, 12^{d} : spreading and carrying the hay, nothing, because the customary tenants did it : mowing acre called Langemede by contract, 7^{d} : spreading and carrying the hay, nothing, because the servants at the Court-house did it 8/4

Custus autumpnalis (*harvest home*).

Four qrs 3 bus. extra bread, 26/3 : ten qrs. 3 bus. extra malt brewed, 56/- : butcher's meat, 30/4 ; besides nine wethers from stock, value 9/-, all the above consumed in seven weeks, while the bailiff, the water bailiff (ryperone), the beadle, the carter, the six ploughmen, John Hyne the swineherd, the dairymaid (daia) the two hay pitchers (tassatores) the cook, the brewer (who is also baker) and the three cowmen eat at the lords' table, and the sixty-six customary tenants were reaping and tying the corn at "Lovebedryp," getting one meal a day only. Salt fish, mackerel, and herrings, 14/6 : cheese, butter and eggs, 11/10 : onions and garlic, 13^{d} : two bushels of salt, 6^{d} : three geese, 9^{d} : sixteen pairs of gloves, 23^{d} :[a] dishes, cups and plates, 4^{d}. The said customary tenants reap, tie and shock 30 a. of wheat and 21 a. of "haras," and the bondmen (nativi) reap and tie 39 a. of wheat, 31 a. of barley, and 18 a. of haras. Forty-one more acres of wheat, 51 of barley, and 9½ of oats are reaped, tied and put in shock by contract for £3 2 7½. So the cost of harvesting works out 9^{d} per acre for wheat, 11^{d} for barley and 6^{d} for oats. Wages of three "pedanei,"[b] who turned the corn and three "tassatores," who pitched it, 41/-, three receiving 20/- and three 21/- for the harvest. Brewer's wages in harvest, 6/8 : water bailiff, 6/8 : the cook, who was sometimes in the harvest field and sometimes superintended the pitching (erat super tassam), 6/8 : Henry Childemulle, six men from Harrow, and eight men from Harmondsworth and Longeforde, who mowed and reaped with our people (cum supradicta familia) before the corn was carried, had each sixpence a day, say 22/6 . . . . . 11 7 7½

Besides stock consumed to value of 4/2/4

[a] "Pro famulis manerii," according to another year's computus.

[b] In another computus, a man who was hired to wait when the warden was at the court house is called "pedaneus."

Expensæ custodis, sociorum Collegii et senescalli.

The warden, John Bekynton, Robert Lechlade and William Pope[a] coming to hold a court of the manor, take stock, audit accounts and do business at Heston and Isleworth, "per vj bullas," i.e. by six vouchers, 31/10: warden, John Boseham, William Pope and William Morys coming again on business, per ij bullas, 16/11 . . . . . 48/9

Stipendia.

Serjeant, 20/-: beadle, 20/-: carter, three ploughmen, and three herdsmen at 10/-, 70/-: dairy tenant (firmarius vaccarii) 5/10: swineherd, 4/-: shepherd, 13/- 119/10

Expensæ forinsecæ.

Richard Prentys of Wexbrygge, a fine laid on him two years ago and now paid by warden, 6/8:[b] Thomas Culverhouse, price of two bushels of wheat given to him by warden "ut bene se haberet erga tenentes," 18[d]: Walter Richeman, price of three bushels of wheat given to him by warden, 3/-, and Robert Martyn, price of one bushel given to him by warden, 9[d].[c] Paid fees for eighteen writs of *supersedeas* to relieve us from payment of the tenth and the fifteenth, 8/-[d] paid clerk who engrossed them, 4[d]: serjeant's expenses riding three times to fetch them, 12[d]: paid dairy tenant by warden's order for attending two cows in danger when calving, 5/10: paid pope's nuncio for churches of Harmondsworth, Heston, Twickenham, and Hampton 13/- for the two pence in the £ granted by the clergy: paid bailiff of the hundred for arrangements with sheriff of London about the hamlet of Longeforde and the bridge there, 13/4: driving 19 pigs to Winchester College and a boar and 20 pigs another time, the expenses of two of our servants on the road, 4/10: John Gussich, the warden's clerk, his expenses when he came here after money, 14[d]: paid sheriff of Middlesex to be excused attendance at hundred court of Ossulston this year, 2/6: expenses of warden's clerk when he came after money in January, 16[d] 63/3

Sum total of all expenses	47	13	2½
Balance of receipts over expenses	138	15	1½

Allocaciones.

Serjeant for divers expenses incurred in autumn through this year's heavy rain, 40/8½ and 11[s] a gratuity to bailiff's wife: also 48/3 for attention to divers matters and disallowances 4 19 1½

[a] Two of the fellows and the steward.

[b] He had been amerced in the manor court, but refused to pay, and this way was adopted of writing off the fine.

[c] Probably seed-corn.

[d] These writs were granted on production of the college charter of Privileges.

Denarii (cash payments).

Master John Morys, warden of the College of Saint Mary Winton, and John Boseham and Robert Lechlade, bursars, *per indenturam* . . . 53 18 11

Liberatio forinseca.

Thomas Bergamene for housing tithe corn at Heston rectory, 100/2[d]: for work on chancels of Heston and Isleworth and the new grange not completed last year, £43 0 5. . . . . £48 0 7

Sum of allowances and payments £106 19 5½

Balance due at foot of roll 31 15 8

On the back of this roll the serjeant accounts for 258 quarters 3 bushels wheat, 3 quarters 3 bushels 3 pecks "curall," 178 quarters 3 bushels 1 peck of barley, 24 quarters 6 bushels pulse, 12 quarters 1 bushel oats, and 12 quarters 6 bushels malt. He has sown 110 acres of wheat, 82½ acres of barley, 39 acres of pulse, and 9 acres of oats, and has 19½ acres fallowed (*warectatæ*) for next year. There are 41 loads of hay. The live stock consists of 6 cart horses, 3 plough-oxen (*affri*), 13 other oxen, 26 cows, 2 heifers, 1 yearling, 178 wethers, 2 lambs, 2 boars, 3 sows, 12 pigs, 45 porkers, 1 goose, 4 ganders, 9 capons, 1 cock, 5 hens, no pullets, 2 cygnets, no wool, no lambskins (all sold).[a]

The serjeant then sets forth the customs of the manor with regard to duty work.

Consuetudo fabri.

The smith of the manor makes one plough, finding iron and maple, and shoes two plough oxen (fore feet only) at his own expense.

Arrentata et licentiata.

Sixty-seven days' work to be done by 38 yardlanders and 39 half yardlanders. Each of them who hath a plough ploughs and sows one acre with seed from the manor farm; and he who hath no plough threshes or does such work as he may be put to, one whole day. And sixty-seven more days' work done by same yardlanders and half yardlanders, each of whom etc. (as above).

Clausura.

Fourteen and three quarter perches enclosed from the waste, every four yardlanders and eight half yardlanders enclosing one perch.

[a] In 29 Hen. VI., fifty-three years later, the bailiff accounted for 4 horses, 5 plough-oxen, 14 other oxen, and a bull, 24 cows, 4 boars, 2 sows, 41 porkers, 6 swans, 29 geese, 13 peacocks, 5 capons, 1 cock, 6 hens.

Manualia.

Sixty-six tasks of four customary tenants, each of whom finds one hand for twelve days. Three more find one hand each for six days between the feasts of St. Michael and St. Martin to do whatsoever task may be set them.

Opera purgationis ripariæ.

Sixty-seven tasks of 38 yardlanders and 39 half yardlanders, each of whom finds a man to cleanse the river[a] when warned for one day from the first hour of the day to sunset, every man receiving one meal, a dish of meat or fish.

Opera sarculationis bladorum.

Sixty-seven tasks of said yardlanders and half yardlanders, each of whom finds a labourer for one day, and he receives one meal (repastus) viz. bin et bin,[b] a dish of meat or fish.

Opera falcationis prati.

Sixty-seven tasks of said yardlanders and half yardlanders, each of whom finds a man with scythe to mow and spread the hay in Burymede.

Opera levationis feni.

Two hundred and twenty-four tasks of 38 yardlanders, 39 half yardlanders, and 47 cotters, each of whom finds one man with his tenants, if he has any, to load, rake and stack the hay, three whole days if need be.

Cariatio feni.

Sixty-seven tasks of said yardlanders and half yardlanders, each of whom comes with his cart, if he has one, and carts three loads of hay from the field to the manor farm: and if he hath no cart, he pitches three loads of hay.

Precaria de prato.

Sixty-seven extraordinary tasks of said yardlanders and half yardlanders, each of whom finds a man at "Lovebedripe" to reap and tie corn there one day, from sunrise to sunset, receiving one meal, viz. bin et bin, a dish of meat or fish.

Waterbedripe.

One hundred and twenty-four tasks of said yardlanders, half yardlanders, and cotters

[a] The Colne.

[b] I do not know what this is, unless it be a perversion of "a mon bie et a mon bon" id est, cum commodum et opportunum videbitur.—Ducange, *sub voc.* Bonum. I translate it "potluck."

each of whom finds one man to reap, tie, and gather the corn one day from sunrise to sunset, receiving every thirteen of them three loaves.

Precaria magna.

One hundred and twenty-three extraordinary tasks of said yardlanders, half yardlanders, and cotters, each of whom finds a man to reap, tie, and gather corn in case of necessity, one day from sunrise to sunset, receiving at the manor farm a dish of pottage, beans, or pease, and a dish of meat or fish, with as much cheese as he can eat.

Cariatio bladi.

Sixty-seven tasks of said yardlanders and half yardlanders, each of whom, if he hath a cart, carts three loads of corn from the field to the manor farm, getting nothing for it either for himself or for his horses ; and he that hath no cart, pitches three loads of corn.

We now see what the customs were against which the tenants struck in the fifteenth century.

The little subinfeudation of Padbury's was let temp. Hen. VII. on a land and stock lease. The College found the land and buildings and live and dead stock, and the tenant made the rent and his own living out of the increase of the live stock and the yield of wheat, barley, and pulse, after reserving enough for seed.

The following inventory was taken in the autumn, when the wheat was sowed and the barley and pulse were in the granary ready for spring sowing. The quantity of wheat sown works out about $2\frac{3}{4}$ bushels per acre, from $2\frac{1}{2}$ to 3 bushels being the quantity sown at the present day.

Padburies.

Computus Rob^{ti} Taylour, firmarii ibidem, a festo S. Michaelis Archangeli anno regni Henrici vij j^{mo} ad Idem festum extunc proxime sequens anno eiusdem Regis ij^{do}.

Arrearagia	8	4	1

Firma.

Rent of manor, together with divers lands and rents of free tenants in Sibbeston demised to said Robert for a term of years, this being the seventh; and 40/- of Thomas Wattys for Bernard's, with $20\frac{1}{2}$ acres appertaining thereto, and 12^{s} for acres of land late Ludington's demised to him . . .	7	0	0
Total	£15	4	1

Custumarii tenentes de Hermondsworth . . . . . Nichil.

Liberatio denariorum.

	s.	*d.*
Paid to bursars of College of St. Mary of Winchester 31st January by the hand of Thomas Asshebury *ut per indenturam*	46	8
To same by same 24th April on Easter progress	26	8
To same by Thomas Watte, Farmer of Bernard's and Ludington's, 23d April	20	0
To same by same	66	8
To same by hand of Richard White 7th November	20	0
	£10	0 0

Allocatio.

Allowed for repairs of new manor house at Harmondsworth as paid by vicar	13	4
Balance owing	4 10	9

	s.	*d.*
Whereof owing by John Barowe, a former tenant of Bernard's	24	1
By John Ravener do.	6	8
By Thomas Dunmowe do.	60	0
By Thomes Watte do. nil, quia recepit quietancium. .		
By Robert Taylor present tenant of Padbury, nil, quia recepit quietanciam		

On the back of this roll is Taylour's inventory :

Wheat in 35 acres 11 qrs. 4½ bus.
Barley in store 13 qrs
Pulse in store 5 qrs.
Horses 3.
Oxen 4 value 48/-.
Wethers (multones) 91 value 20d each.
Rams (hurcardi) 5.
Ewes (oves) 28, value 14d each.
Lambs 40.

Utensilia pro carucis.

One wheeled cart; one solecarte (sledge) ; nine yokes; two iron staples with gear for a pair of draught oxen, value 14d; one coulter; one ploughshare, weight 12lbs. ; one solcoer;[a]

[a] Spelled solecowys in another inventory. It seems to mean the sole of a plough.

one paddle, value 14[d]; one pair of wheels with wooden frame and tumbrell; two iron linch pins, value 6/-; one cart body with ladder,[a] "braypynnes" and iron "hurturs": one axletree with eight clouts and two iron linchpins, value 5/8: one cartrope, 4[d]: one rake[b] for feeding oats, 12[d]: three harrows with sixty two iron teeth in good order (hercie cum lxij cavillis ferri abilibus): a dung fork and a hoe, 6/-: two sacks, 12[d]: fourteen "clates"[c] for the lord's sheepfold.

Bernard's and Ludington's.

One cart frame with body, ladder and linchpins, and iron takke;[d] one tumbrel with body for dung, 4/; three collars with two pairs of traces, one cartsaddle with pack: a set thill harness, 3/4; a cart rope, 8[d]: a fork for pitching wheat, 3[d]: seven leather headstalls with rings and links.

[a] A cart ladder is a frame work fastened on either the front or rear of a cart to increase its carrying capacity.

[b] Rake here must mean "manger" not rack, unless the oats were fed in the straw.

[c] Cleats, upright stakes to which the hurdles composing the fold are fastened by means of withes.

[d] Takke, qy "tack" the fastening of the cartbody to the frame.

BROUGHAM CASTLE, WESTMORLAND.—TWO VIEWS FROM THE NORTH-EAST.

Published by the Society of Antiquaries of London, 1903.

XIV.—*Brougham Castle, Westmorland.* *By* E. Towry Whyte, *Esq., M.A., F.S.A.*

Read 12th March, 1903.

About a mile and a half south from Penrith on the main road from Carlisle to York and on the Westmorland side of the river Eamont, which is the boundary between the two counties, stand the ruins of Brougham Castle, one of the most important strongholds of the great Clifford family, who owned no less than four castles in the county, namely, Brougham, Appleby, Brough (under Stanmore), and Pendragon, and also Skipton in Craven, Yorkshire. From comparatively early times the site of this castle has been a place of some importance, as the Romans had here a strong camp, the remains of which are still to be seen in the field to the south of the present building. The name of this camp was *Brovacum*, but it has been spelt in various ways. It was a rectangular parallelogram surrounded by a single ditch about 75 feet broad with rounded corners, and had a rampart on the inside. There has also been a berm or terrace between this rampart and the ditch below the main defensive works, which were of timber. No trace of the entries to the camp now remain. The ditch on the south side is still complete, and portions on the east and west. Mr. G. T. Clark, in a paper in the *Proceedings of the Cumberland and Westmorland Archæological Society*,[a] gives the area within the ditch as 113 yards by 134 yards at the present time, but says it was most likely 198 yards originally, as that was the proportion of the Brough camp. The reason for placing this camp where it is was to guard the ford across the river Eamont where the road from York to Carlisle crossed that river. This ford I think was a little further down the stream than the present bridge, at a point where it is very shallow in summer, but during the winter and spring it must have been often dangerous and at times impassable. Of course the bed of the river may have been quite different in Roman times, but probably its course was much the same

[a] Vol. vi. 15-26.

as at present. If I am right as to the site of the ford, the Roman road was continued in a straight line from about the Countess's Pillar to the brow of the hill above the river, down which it went at a sharp angle to the water, and then straight across the marshy field until it meets the road as traced by the ordnance surveyors. The camp stands on the south side of the river about 30 feet above it on flat land; and if Mr. Clark's suggestion as to the original size be correct its north-east corner was about 50 yards distant from it. On the opposite side for some considerable distance must have been marsh land, probably often flooded, whilst still further north rose the conspicuous hill now known as Penrith Beacon, under the southern flank of which the Roman road ran in an almost straight line to the next important camp, *Voreda*, near the village of Plumpton, about five miles north-north-west of Penrith. The camp was also, in all probability, approached by another road, which ran past the present Brougham Hall and across the river Lowther near the bridge and on to Yanwath, where it joined the road that goes over High Street, which in places attained an elevation of 2,200 feet. A third road I think led to the camp from the south, going over Crosby Ravensworth Fell and so on to Lancaster. The main road all the way from Brough Castle to Carlisle is a most wonderful piece of engineering, when the probable condition of the country when the Romans made it is considered. Its gradients are seldom excessively steep, and yet it keeps an almost straight line for miles; and this was surveyed and made at a time when the whole country was a dense forest and the surrounding hills inhabited by a warlike and hostile race. It is rather surprising, considering the military importance of *Brovacum*, that it has not yielded more important monuments than it seems to have done. Stukeley mentions that he saw many fragments of altars and inscriptions at the Hall (Brougham Hall), and in the wall by the Roman road beyond the castle and near the Countess's Pillar a pretty "buste," part of a funeral monument, and further on another bas-relievo much defaced, so that in his time perhaps there were some monuments which are now lost; but Chancellor Ferguson in his *History of Westmorland* says it "has not yielded many inscribed stones, and those not of any great importance. A couple of altars to the local deity Belatucador and four or five fragments of tombstones." A portion of an inscription remains on a slab in the ceiling of a doorway passage leading to the second floor of the keep; the only word I could read for certain was Titus.

Without doubt the same reason which induced the Romans to place their camp at this place, namely, the guarding of the ford, caused the Normans to select it as a site for one of their castles, for in all probability they continued

to use the Roman road as their highway; and it was not until much later that this ford was given up, or lost its importance, when the road was diverted to the bridges which were built over the Lowther and Eamont. But even then the castle would be a great protection, as the road had to pass close to its southern wall. The Eamont bridge is a fifteenth-century one, but that may be a re-building, or may point to the time when the Roman road was abandoned. The present Lowther bridge is modern, built about 1870 I think. Hutchinson's map

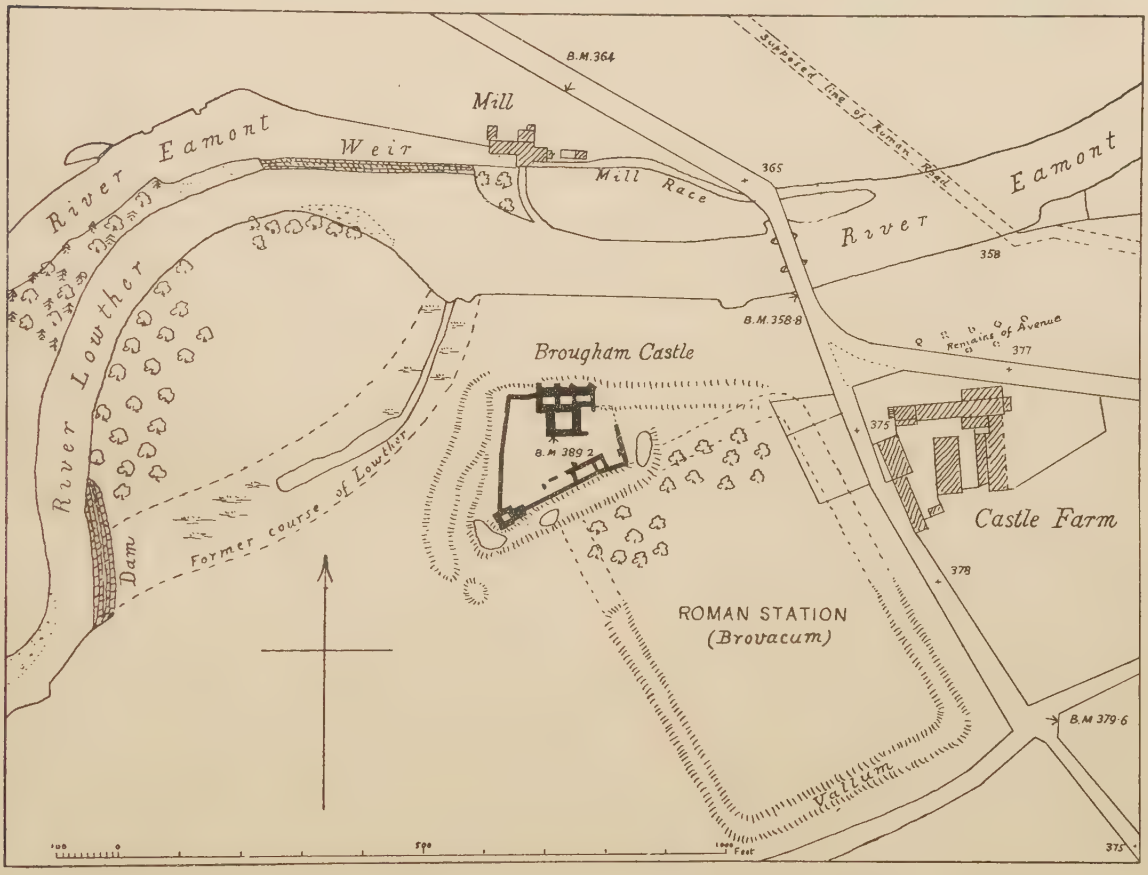


Fig. 1. Brougham Castle. Plan of the Site. From the Ordnance Survey.

of this district shows this route as the main road from York to Carlisle; this was as late as 1794. But when it became important to save time in the latter days of coaches a new road to Penrith was made, and a bridge thrown over the Eamont near the castle. This is the road as it now exists, which cuts off a considerable distance and avoids a steep and awkward hill just past Brougham Hall.

The ruins of the present castle are a striking and picturesque object from the bridge over the river by reason of the massive keep and two great gateway towers; and though Brougham is only one of many castles and towers which are thickly scattered about this district, it deserves more than a passing glance on account of its curious arrangements. Unlike any others in the neighbourhood, moreover, I think there have been several errors made in the dates assigned to the various parts of the building. It is situated on the south bank of the Eamont, about 50 yards from the river and about 30 feet above it, at a short distance east of the junction of the Lowther with that river, and its general plan seems to have been governed by the contour of the ground on the north and west sides, and on the south by the line of the Roman vallum, if the camp was of the size suggested by Mr. Clark. The approach has always been much as it is still, and is marked by the remains of an avenue of trees, probably planted by the Countess of Pembroke. This avenue apparently crossed the present road to a point where I think the old road went down the bank to the ford. On the east and south sides it is protected by a deep ditch, which has been about 50 feet wide, but at present varies from 60 feet at the north-east end to 48 feet at the postern tower. This ditch is continued round the west side until it dies out in the flat land below the bank on which the curtain wall is built. At the south-west corner is a second ditch likewise dying out. This clearly is an extra protection to the postern, which is by the tower at this angle. A narrow causeway crosses the main ditch from the postern, but this may be part of the Countess of Pembroke's work. Formerly the Lowther ran nearer the castle on this side than it does now, and the tongue of land between it and the Eamont was marshy.

Of the owners of the site of the castle and lands before the Conquest not much is known. They were Saxons of the name of Broham or Burgham, and a curious fact is that there still lives at or near Penrith a Burgham who claims descent from the Saxon family. The Conqueror granted the whole county of Cumberland and the great barony of Westmorland to Ranulf de Meschines, one of his followers, for services at the battle of Hastings. It then passed to the Morvilles, but in 1170 Henry II. seized upon their estates in consequence, it is said, of the Morvilles being implicated in the murder of Archbishop Thomas, and granted their custody to Gospatrick, son of Orm, but retained the barony for the Crown. King John granted the barony, together with the hereditary sheriffwick of Westmorland, to Robert, son of William and Maud de Veteripont, in 1204. This Maud was a daughter of Hugh de Morville. Another Robert, grandson of King John's friend, was killed fighting against Henry III. He was the last of the

Veteriponts, as he left two daughters only, the elder of whom married Roger de Clifford, from whom descended the long line of Cliffords, who held the castle until 1643, when the male line became extinct, and the Countess of Pembroke, as last surviving child, succeeded. On her death in 1676 all her immense estates passed to her grandson, the Earl of Thanet, and from the last earl they passed to the present holder, Lord Hothfield.

The defences outside the principal entrance are now entirely obliterated, but a few stones along the edge of the roadway on the side next the river seem to indicate that at about 21 yards from the entrance was the outer side of the ditch, over which a drawbridge would be placed. This may have been a separate structure, or, what is more likely, a curtain wall with an archway in it, connected at its southern end with the buildings which have now entirely gone, and returned along the northern face up to a point about 6 feet from the angle of the buttress next the entrance, where two or three more stones suggest that there was another ditch to be crossed before reaching the great gateway, this ditch being spanned by a narrow timber bridge which could easily be removed if necessary. There are no traces of any arrangement for working a drawbridge above the entrance, nor, as far as I could see, any stones below for the pivots to work in. The three holes at some height up above the entrance do not seem to have ever gone through the wall, and the middle one is not in the middle of the entrance arch. Moreover, it could serve no useful purpose for working a drawbridge. None of the holes shows any signs of wear, the edges being quite sharp. I am more inclined to think that they are the holes left for some timber balcony to defend the entrance before the tower was raised to its present height, and when the parapet was intended to be somewhere about the level of the offset; but it may never have been so completed, as by the time they got up there another floor may have been decided upon. It is difficult to assign a date to the ditch, but I am inclined to think it must be of the same age as the Norman keep. At first there was probably only the great keep and staircase entrance protected by the ditch and a wooden fence, with timber buildings for the retainers and stables. In the present curtain walls I did not notice any Norman work, certainly none similar to the keep, but they have been so much altered at various times that it is not an easy matter to assign an age to them. There are no flat pilaster buttresses such as are to be seen in the wall of Middleham Castle in Yorkshire or in parts of Carlisle Castle. The entrance arrangement I have suggested is unusual, but at Helmsley Castle there is something like it, but much further away from the keep.

In describing the existing buildings I shall begin with the outside at the

entrance gateway, and going round the north, west, south, and eastern sides, follow the same course for the inside as far as possible, leaving the keep to the last.

The entrance itself has had a portcullis and a pair of heavy doors with massive bars, the two folds opening inwards. It has a segmental arch outside and a pointed arch within, both with plain chamfers. The portcullis worked in a

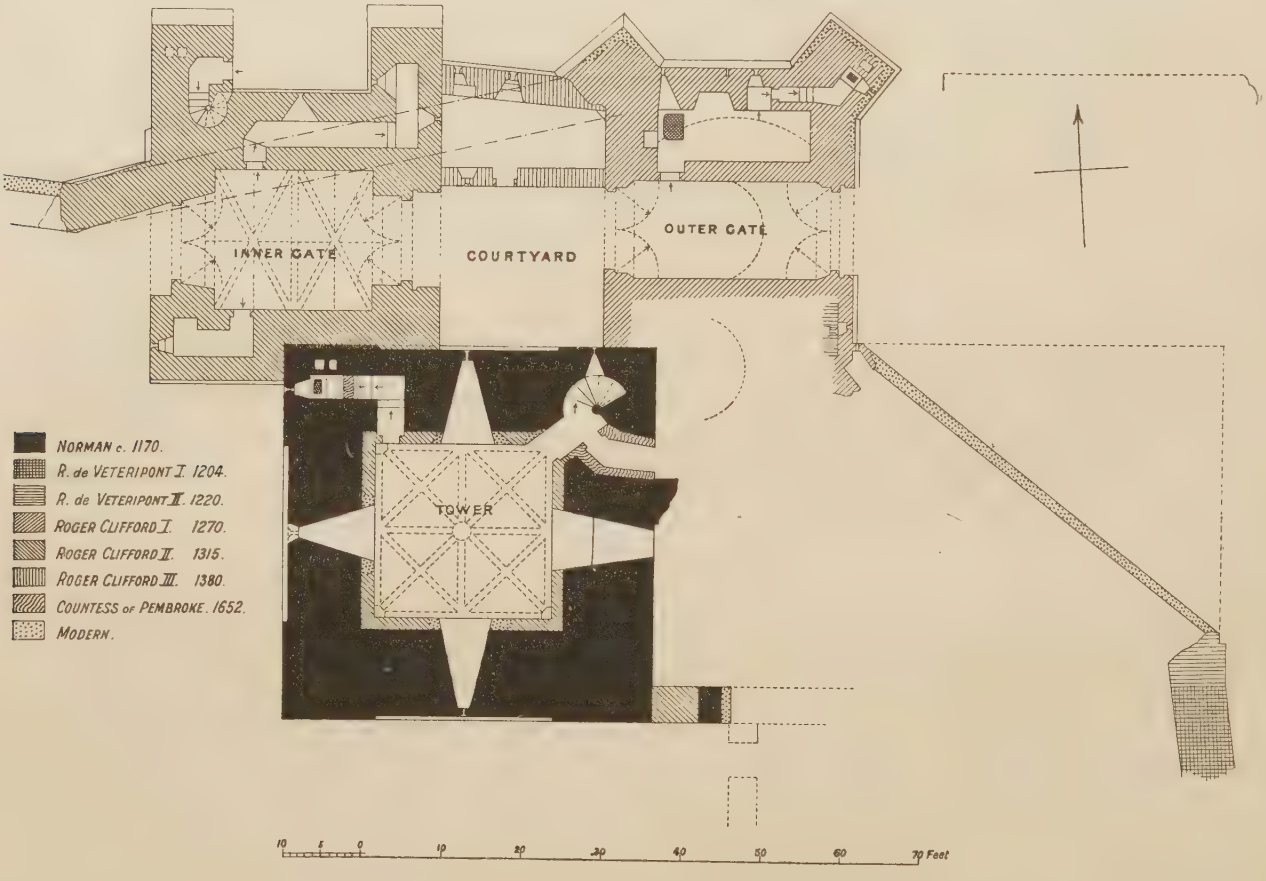


Fig. 2. Brougham Castle. Ground plan of the tower and gatehouses.

groove between the two arches. Above the arch is inserted in recent masonry a stone about 14 inches square with an inscription in raised letters on a sunk panel, "Thys made Roger." This Roger was Roger de Clifford, who lived in the reign of Richard II., 1377-1399. The Countess of Pembroke states that in her time it was placed over the inner gateway, but soon after it disappeared until about 1839, when part of the mill weir was carried away by a flood, and the stone discovered and then placed where it is now by the Earl of Thanet. Neither in its present position nor in that mentioned by the Countess of Pembroke is it a contemporary

record of the building, both gateways being earlier. It may have been put up as a memorial to the builder, who was also a Roger, or it may have formerly been on some other part of the castle. I may here remark that Rogers and Roberts alternate in a bewildering manner for a long time. Hutchinson states that the arms of Vaux "chequy Or, and gules" still remain on the tower,[a] but I cannot find that they had anything to do with the castle; more probably the arms were those of the Cliffords, *checky a fess and a bendlet.*

Some distance above this stone are the three square holes already referred to. Near the ground level the entrance is guarded by two loopholes on the left hand one of which has been curiously altered, apparently by the addition of an outer skin, and on the right hand there was a loophole, which also served to light a garderobe off the porter's room. This now is not visible from the outside, as the angle tower to about 8 feet in height is modern walling on the old foundations; it is only a casing of no great thickness, and the loop is almost perfect inside. On the first floor, and on either side of the entrance, is a fine geometrical traceried window, with central mullion and transom, with cusped heads and quatrefoil in the arch over the mullion. These windows should fix the date of this work at about 1270, making it the work of Roger de Clifford, who married Isabella, the eldest daughter of Robert, the last of the Veteriponts. A little above the arch of these windows is an offset, and nearly over the windows just referred to are two somewhat similar, but of later work, about 1310. One of these windows was quite perfect until recently, when the mullion was allowed to fall out owing to the lack of slight repairs. This of course has caused the ruin of the tracery above. The transom still stands, but will very soon likewise fall, one end being entirely unsupported. Probably this floor was added by Roger de Clifford, a grandson of the first Roger, who built the gateway. He took up arms against Edward II., and was attainted, but afterwards restored.

I may remark that it is a great pity some slight care is not taken of this interesting building, as it is every year getting worse and worse, partly owing to decay and partly to wanton destruction.

Over the entrance at the top are three, formerly four I think, heavy corbels to protect the door below. In the extreme left-hand corner is a drain hole, which has taken the rain water from the gutters and roofs. In the angle buttress high up is another small loop, lighting a privy. With the exception of these two

[a] W. Hutchinson, *An Excursion to the Lakes in Westmoreland and Cumberland*, etc. (London, 1776), 50.

small places this buttress seems quite solid. The curtain wall on the left has never been higher than about 9 inches above the springing of the lower window heads, as can be seen by the coping, but only a fragment is left. Continuing along the north or river face low down are several small slits; the lowest lights the prison below the porter's room. Above is a larger window with a square head. There is also a small loop, now blocked, which is immediately behind the fireplace, and of which there is no trace inside. Over this floor is a larger square-headed window, probably a later insertion; this window is in the same room as the geometrical windows already mentioned, whilst over that is a Decorated window similar to the other two on this floor. Close to it is a corbelled projection to take the flue of the porter's fireplace, which at this point had to be taken outside the wall so as not to interfere with a passage running through the wall that led to a door, and a staircase on to the leads in the next buttress. This staircase is lit by a small loop, whilst below is another loop lighting a room I could not get into, but is most likely a privy.

In the flat wall next at the ground level is a drain from the ground floor of the added rooms inside. This wall seems to have been either added or rebuilt. Part of the angle turret has been cut away and the bonding is imperfect, whilst it is not bonded at all to the square turret of the second entrance gateway. This turret, the upper part of which is ruined, has one window on the first floor and a small loophole half way between the ground and first floors to guard the postern door in the next turret. Between these two turrets there have been two large Decorated windows, one on the first floor, the other above it. The last turret contains the postern, which has communicated by means of a winding stair with the first-floor room. Above this staircase are two small windows, one above the other, each cut in a single stone, lighting garderobes off the first and second floors. Abutting this second gateway the height of the curtain wall and parapet can be seen, a few of the corbels which ran under the parapet being still left, and next the wall the top stone of the parapet. This wall is 6 feet thick.

Except for foundations and a few courses above, not much of the rest of the curtain remains outside; what is there now is thin and of no great age; but sufficient is left to show that it was faced with large square stones and was most likely of the same age as the keep windows.

Next we come to the south-west tower, in front of which was the double ditch already described. In the curtain close under this tower is a postern with a skew entry. At the angle of the tower next the postern is a corbelled-out privy from the second floor, and above the curtain wall, nearly in the centre of the tower, is

a quarter-circle projection for a staircase which goes up to the top; also from the second floor a doorway leads to a flight of steps down to the parapet walk on the curtain wall. The windows of this tower are mostly square-headed, but some are lancets, and in some cases the lights have been altered at a later date. One angle of this tower is entirely ruined. There seem to have been some large windows in it, by the remains of the jambs. Two sides of this tower are a perfect warren of passages. Each floor has a fireplace.

On the south-east side the wall as now standing is of various ages, much

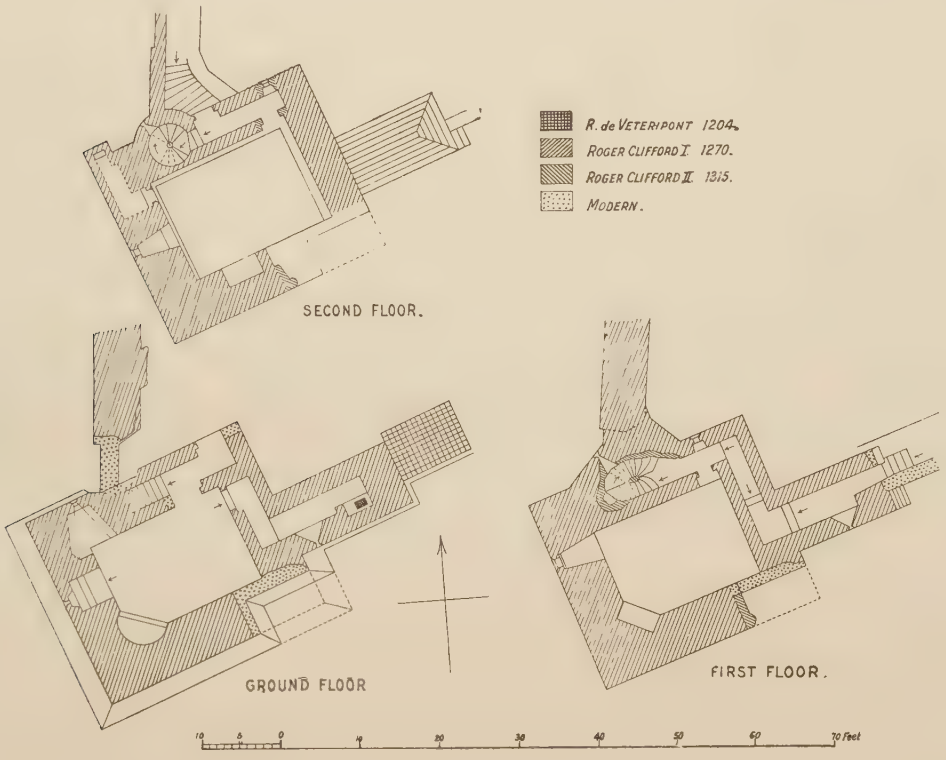


Fig. 3. Brougham Castle. Plans of the postern tower.

patched, but in the main it probably belongs to the time of the keep windows. There are one or two slits and windows blocked up which now show no trace inside. The lower half of the wall is built of large square stones mostly grey; the next portion of rough-faced stone random coursed and much smaller; this extends up to the sills of the chapel windows. Above that it is coursed red sandstone ashlar about 9 inches high each course; this is only along the chapel and a little way beyond on each side; beyond that point above the kitchen fireplace it is of the rough-faced random coursed work. The rest of the walling up to the angle

is mostly of large squared stones with many insertions, and is very difficult to assign a date to. I think it must have been rebuilt, using up old material. The curiously canted south-east corner almost suggests that at one time a tower stood here which has had its two inner walls pulled down altogether, perhaps when the chapel was built.

The chapel has two windows on this side which are perfect; they are plain lancets with trefoiled heads. In the Countess of Pembroke's time, probably, a door was cut through the wall into the small yard east of the chapel. This is now blocked up again; the ditch has also been partly filled up opposite this door so as to make a convenient entry.

On the east side the walling is much the same as on the other side from the south-east angle to the broken buttress, and here is the only external wall string in the whole building. It has been moulded, but is so much weathered that the moulding cannot be made out. Beyond the buttress going north at a considerable height up are three, formerly four, very narrow slits which have been carefully blocked up, and of which there is no trace inside,[a] and about the same level two two-light windows with trefoil heads under a square head have been inserted, most likely the work of Roger de Clifford, who died in 1391 and is said to have been a great builder who built the greater part of the castle "next the east." But he evidently only altered existing buildings and added to the height of the walls, perhaps remodelling the castle inside. The next bit of wall is of a different style, and is not bonded to the other; also it is at a different angle. At one point, just where the modern wall abuts it, there are the remains of a window jamb with a single well-carved dog-tooth on it of the usual thirteenth-century type. It is the only one I have noticed in the building. Perhaps an early chapel stood here having some communication with the early hall. Beyond this point the canted wall to the entrance gateway is modern, and it is quite uncertain what the plan may have been. The existing remains on the gateway tower show that the wall at that point was never higher than the springing of the first-floor windows, and seems to have been roofed over its entire thickness; also it appears to have gone at right angles to the line of the entrance gateway.

Inside, after passing through the entrance doorway, there is a plain barrel-vaulted passage, the walls of rough random coursed work, the vault of ashlar in rather large stones. On the right is the porter's room, a fairly comfortable one, with a fireplace and a passage in the wall leading to a garderobe in the angle

[a] This may have been a hall built by Robert de Veteripont when he obtained the castle.

turret next the entrance. The room is vaulted with a barrel vault longitudinally. Below is the prison with a pointed vault going the opposite way, and it has a small window high up. When I made my first plan in 1870 the entry was fairly perfect, but it has since got much broken away and the place half filled up with stones. It was a hole in the floor of the warder's room without any stairs down, and was covered by either a stone or wooden door.

At the end of the vaulted entrance passage was another pair of doors with bars, etc. opening inwards. Beyond is a small courtyard bounded on the left by the keep and on the right by a long narrow room, over which have been three other floors. None of these rooms has been vaulted. The first and second floors had fireplaces, the second and third floors have been entered from over the warders' room. The entry to the first floor is not now clear, probably access was got to it from the ground floor by means of a wooden staircase; the third floor had an entry also from the second gateway. All these rooms are clearly an addition, the second angle turret of the warders' tower having been partly cut away inside so as to square the rooms, the wall next the courtyard is not bonded, and the outer wall in an imperfect manner next the warders' tower, and not at all next the second gateway. It is difficult now to suggest where the curtain wall originally was, if there was one, as the wall of the wardens' tower has been cut about, whilst that of the second gateway has been an external wall. Beyond the small court just mentioned is a second gateway, also with a portcullis and doorway, the wall being 8 feet 9 inches thick. Over this entrance, but quite in the right-hand corner, is a fine fourteenth-century window, with mullion and transom somewhat similar to the others at the same level. Passing through the gateway there is another passage, with good quadripartite vaulting in two bays, with vault-ribs of a plain chamfer section supported by plain corbels. In this passage on the left-hand side and next the inner courtyard is a porter's room, lit by a small window looking into that courtyard, and roofed with flat stone slabs. Nearly opposite is a doorway, 5 feet from the ground level, leading to a passage in the thickness of the wall, and ending in a small chamber with an arrow slit to guard the postern mentioned in the description of the outside. There is also a small window looking into the first-floor room of the added portion. This window has evidently been intended for an external one. At the end of the vaulted passage there are another pair of doors opening inwards, which have been hung in a pointed arch with a segmental one outside towards the inner courtyard. Beyond this gateway the curtain wall cants inwards for about 10 feet, so as to shelter the doorway from the north.

This system of two entrance gateways close to each other, each having a portcullis and two pairs of doors, both pair in each case opening inwards towards the passage, is curious, and as a system of defence not easy to explain, as it seems that if the outer door were forced all that the enemy had to do was to unbolt the inner one and open it. Further, it does not seem to have been of the nature of a rat-trap, as there is no apparent way by which the besieged could have got round to close the first gates behind them, unless that was in the entirely ruined part where the modern canted wall now is. Another curious thing is that there is no great difference of time between the two gateways, the first being built about 1270 and the other about 1310, or a little later, say 1315.

Continuing round the courtyard there do not seem to have been any buildings of importance between the second gateway and the south-west tower, which was most likely the quarters of the officers and guard. In the curtain under this tower is the postern already mentioned in the description of the exterior. Entering the tower by a doorway near this postern, the room on the ground floor has a large fireplace in the south-west angle, and in the north-east side a long passage ending in a privy. From the entrance passage a flight of stairs leads up to the first floor, which has also an angle fireplace. The staircase is curious, and appears to have been altered at some period. In the thickness of the wall is a long passage ending over the privy in a door leading on to the parapet walk of the south wall. From this floor upwards the staircase is circular, and from the second floor a door led to a flight of steps down to the parapet walk of the curtain wall over the postern. Both this room and that above have had fireplaces. This tower has been a good deal altered at various dates.

For about 50 feet on the south side from this tower there seem to have been no buildings only the curtain wall. The room which came next on this side is now much ruined. It may have been a great chamber. It seems to have been a single room about 45 feet long by 20 feet 6 inches broad. There have been cellars under it, or rather it was on the first floor. It was covered by a ridge roof at a lower level than the chapel, as can be seen by the marks on the west wall of the chapel, but appears to have had another low floor added at a later date with a flatter roof. There are no windows or doors left except one into the chapel, and another in the corner with stairs leading up, and in the centre of the same wall a small square window looking into the chapel. The floor was of wood; one or two heavy stone corbels for carrying the beams are still remaining in the end next the chapel.

The chapel was also on the first floor and supported by beams. The north side

is much ruined, but the south side is almost entire, and contains the two windows mentioned in the outside description, which internally have large splayed jambs, segmental arches over, and a very steep sloping cill, the stones being feather-edged. Above the windows are the stone corbels that carried the roof. Near the east end are three sedilia and a piscina of good design and quite perfect. The fine large stone corbels which carried the floor beams still remain on this side. On the ground floor on the north side at the north-west corner is a thirteenth-century pointed arch doorway leading into the room under the chapel. A little

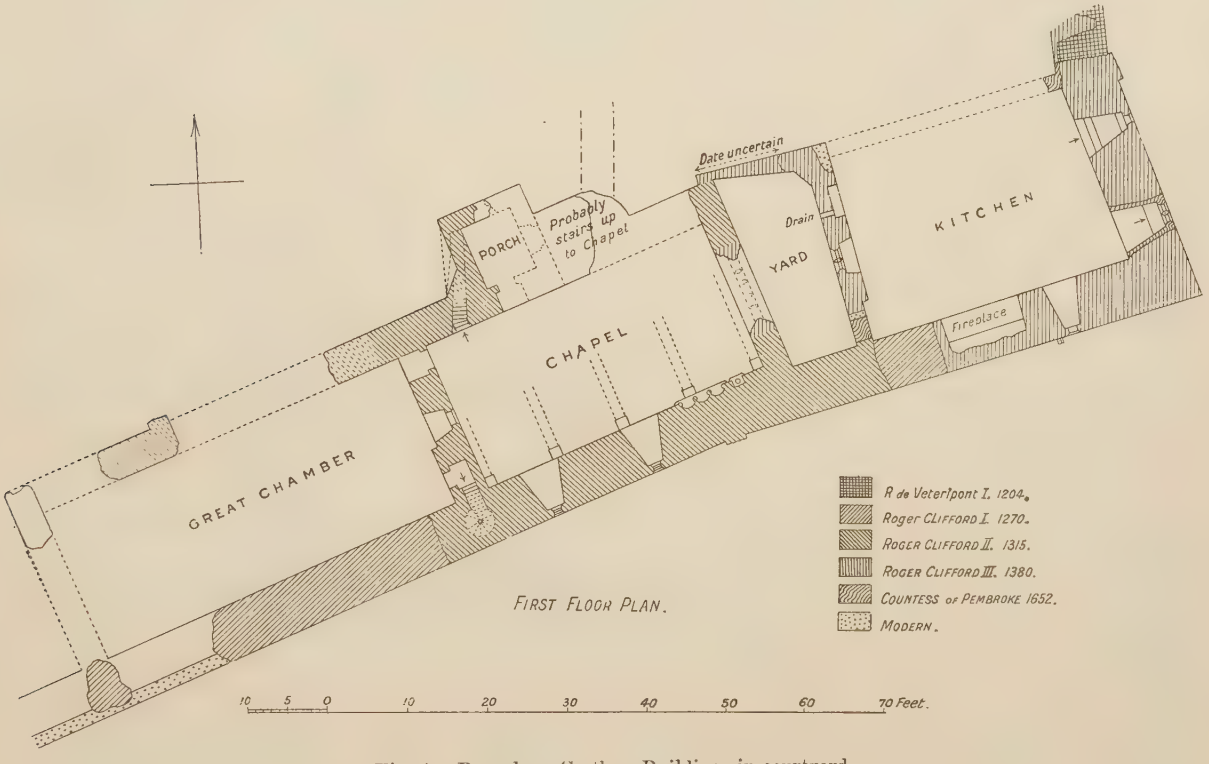


Fig. 4. Brougham Castle. Buildings in courtyard.

way east is a projecting tower with a small chamber on the ground floor with a stone roof. The rest of this side is entirely ruined, but probably contained a staircase from the ground level up to the chapel. On the first-floor level there has been a room in this tower entered from the chapel, perhaps the porch or a vestry, whilst just west of it and nearly over the doorway on the ground floor is a door which has opened into the chapel; this leads to a very steep flight of stairs up to a room over this porch. These stairs are carried on a rather curious canted piece of corbel work outside, but very little of this upper room now remains. It may

have been a priest's room or ringing floor for a bell. At the east end of the chapel there has been a large tracery window of grey stone in a wall of large square red sandstone ashlar; perhaps this window is an insertion in earlier work. It has had two chamfered orders inside and two ogee orders outside with chamfer mullions. The greater ornamentation of the jambs outside is curious, as it looks into a little yard where it could never be seen.

At some time this yard was roofed over below the cill of this window. It is entered from the outside by a door, of which only one jamb stone remains, through a skew passage. From the room which was below what I think was the kitchen a door enters this yard, and a window looks into it, also a curious little skew slit, whilst above that, on the first floor, there has been a door now blocked, a two-light window with a square head, and a sink and drain. Beyond this yard eastwards on the first floor are the remains of a large fireplace and three windows. The northern wall is thin and badly built, taking the place of a much thicker one. All this part has been much altered, and the windows are of different dates. It was made into a kitchen by the Countess of Pembroke, and very likely always was the kitchen. To the north of this kitchen, also on the first floor, has been the principal hall, with cellars under. This is where the blocked loops before mentioned occur. It has been lit by two two-light windows in the external wall, and has had a large fireplace. At the extreme end, in a recess in the wall, is one jamb and half the arch of a small but rather good doorway, the door having opened outward. This doorway is, like the windows, the work of Roger de Clifford between 1364 and 1391. Where it led to cannot now be made out, but close to it at a slightly lower level is the jamb with the early English dog-tooth before referred to. The plan now is very difficult to make out, owing to the heaps of rubbish all over the ground about here, entirely covering all traces of the inner walls. From the door jamb to the entrance gateway the present wall is modern, and most likely not on the ancient lines. Between the point where this wall ends and the top of the wagon vault of the entrance there is another wagon vault at a somewhat lower level covering a chamber to which I could not obtain access, as Lord Hothfield would not give permission for any walling, even modern, to be moved. The rooms above the entrance have been fine and large, one on each floor, with fireplaces on the west wall, and well lit by three windows each, which have been already described. Part of the arch for the portcullis still remains on the first floor, and several holes in the stones of the wall, some perhaps connected with the machinery for raising it, others for blocks to nail panelling or tapestry to. In the north-west corner on the first floor is a doorway communicating with

the second floor of the added rooms, but formerly going to a privy in the angle buttress most likely. On the floor above, the north window jamb has two doorways, that to the east leading to a privy in the angle buttress, and that opposite leads to the third floor of the added rooms, and also to a circular staircase in the angle buttress leading on to the parapet walk. These walls have never been much higher. All the windows except the north one on the second floor have

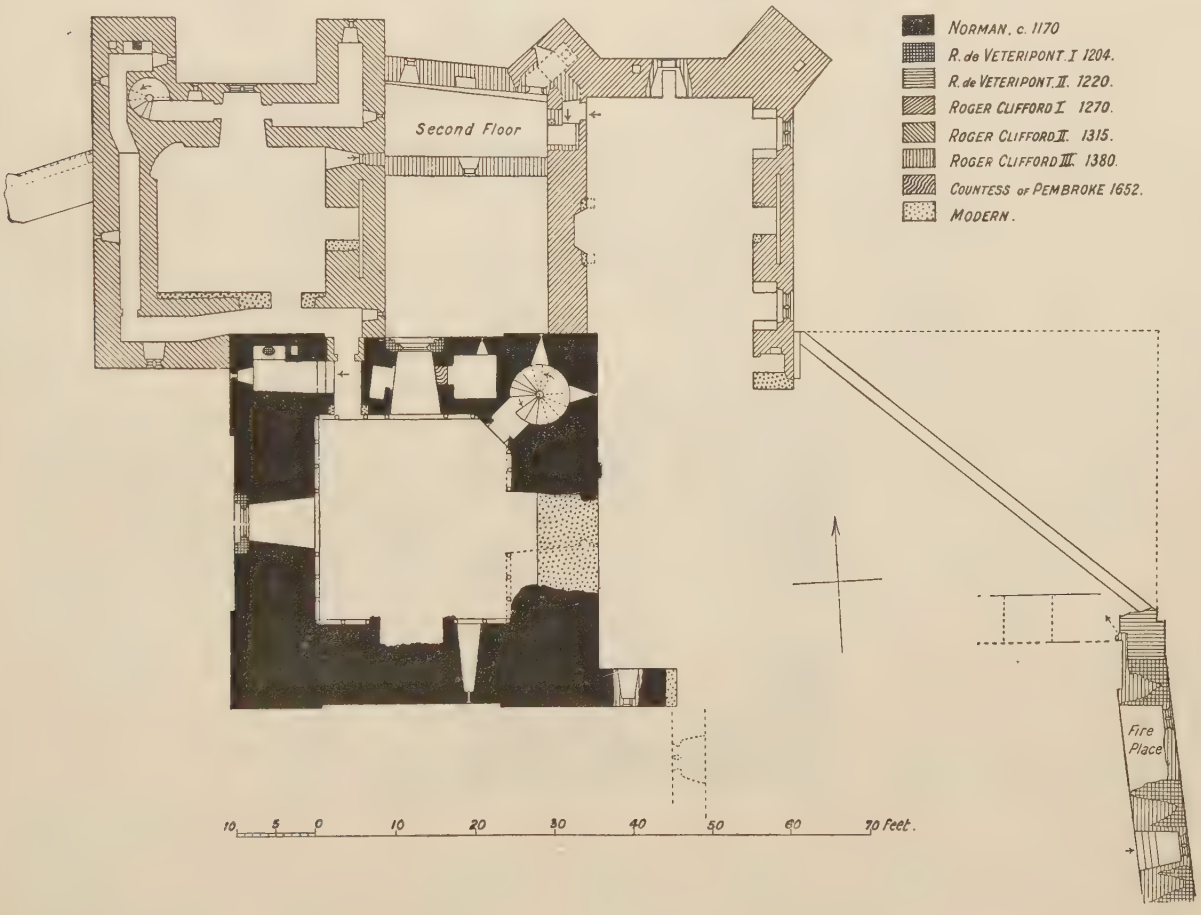

Second Floor
NORMAN, c. 1170
R. de VETERIPONT. I 1204.
R. de VETERIPONT. II. 1220.
ROGER CLIFFORD I 1270.
ROGER CLIFFORD II. 1315.
ROGER CLIFFORD III. 1380.
COUNTESS OF PEMBROKE 1652.
MODERN.
Fire Place
10 5 0 10 20 30 40 50 60 70 Feet.

Fig. 5. Brougham Castle. First floor plan of tower and gateways.

stone seats. The floors have been timber. It is now uncertain what length these rooms have been, but most likely they extended to the remains of a wall on the keep, from the staircase of which there was an entry to the second floor, cut skew in a rather curious way, and from other slight wall remains probably there was a screen across on the northern side of this entry.

Formerly access from the second floor of the first gateway could be obtained

to the second floor of the second gateway by crossing the third floor of the added rooms, but this was not an original arrangement. The first floor over the second gateway seems to have had only one window, that facing north, in the jambs of which are doorways. That on the east leads to a passage in the buttress, which has a window looking north, and a loop now looking into the second floor of the added rooms, but this at one time was an external one. The doorway on the west side leads to the circular staircase that ends in the postern at the bottom. This staircase is now ruined. This room has an angle fireplace. The portcullis recess is

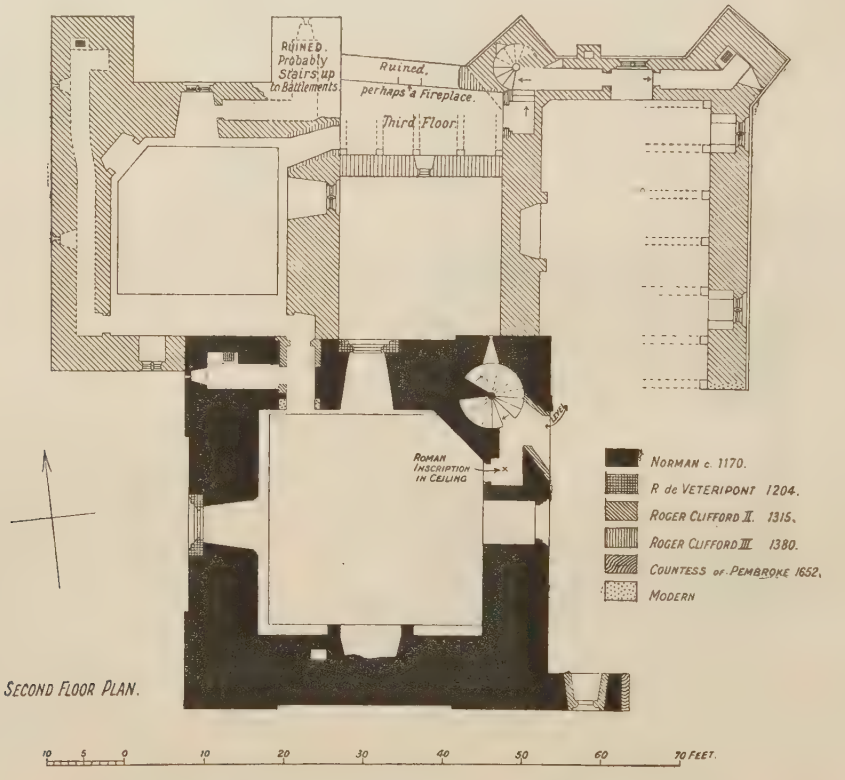

RUINED. Probably Stairs up to Battlements
Ruined, perhaps a Fireplace.
Third Floor
ROMAN INSCRIPTION IN CEILING
NORMAN c. 1170.
R de VETERIPONT 1204.
ROGER CLIFFORD II. 1315.
ROGER CLIFFORD III 1380.
COUNTESS of PEMBROKE 1652.
MODERN
SECOND FLOOR PLAN.
10 5 0 10 20 30 40 50 60 70 FEET.

Fig. 6. Brougham Castle. Second floor plan of tower and gateways.

partly perfect. The present entry is modern, but probably on the site of the old. It leads to a passage the whole length of the building, with a doorway leading to the hall of the keep at one end, and at the other a doorway leading to a narrow passage over the inner gateway which ends in a privy in the buttress behind the staircase; on the whole a curious and complicated arrangement. The room above has evidently been much the same, but seems to have been larger, as the floor extended over the southern passage. It also has an angle fireplace and three

windows, two of them being large fourteenth-century ones, one looking into the small courtyard, the other facing north, which had a doorway leading to the eastern turret, with probably a staircase up to the parapet. In the corner a skew entry leads to the third floor of the added rooms; the walls of both this part and the turret are much ruined at this level. On the west side of the room there is probably a passage and privy like the one below. I was not able to get up to this floor, but could see the commencement of the passage beyond the door. This room had a wooden floor.

At first, as I have already said, probably the Norman builder trusted to the great strength of the walls of his keep, surrounded as it would be by the deep moat, with a timber palisade round it, and to the fact that there was no means of access except the doorway, which would be strongly defended. All the windows at that time would be too narrow to afford any means of access, certainly those on the ground floor were so; and if the first-floor ones were larger they were well protected by the stone corbels, with shoots between for throwing down stones, etc. from the parapet level. These are on all four sides of the building, and immediately over the present large windows and doorway. This keep has had four floors, consisting of a ground floor, the first floor or entrance hall, and two floors over the walls, are of great thickness, those on the ground floor being 11 feet. The walling is different from the rest of the castle, being rough random coursed work in small stones, with ashlar quoins and jambs. On three sides it has broad flat pilasters at the corners. The one on the north-east contains the staircase which has gone from the ground floor up to the leads or parapet walk, but has had direct access to it from the ground floor and entrance hall only; both the other floors were entered from the staircase by passages. The north-west pilaster contains the privies, whilst the other angles seem to be solid. Of the original porch but little remains to show the former arrangement. A small portion of the south wall is still standing, most likely to its original height; but it has had late windows inserted, and its height increased at a later date. The entrance to this porch was probably through a door, of which one springer of an arch and part of a hood which has been cut off remains. From this door there must have been a flight of stairs up to the first-floor level, where the original entrance to the keep was; but of these stairs there is now no trace. That this wall is of the same age as the keep is shown by its being similar in style and bonded properly up to the second-floor window level, but above that point it is thinner and not bonded. On the east face of the keep and near the centre there has been a door into the ground floor, of what date cannot be said, but apparently original; there is also a small

skew entry of much more recent date leading to the staircase passage. The windows that lit this floor were very narrow slits with round heads, as were the staircase lights. On the first floor above the doorway first mentioned was the principal entrance. The portion of the arch and hoodmould and abacus that are visible show it to be of transitional Norman time; say *temp.* Henry II., about 1170,

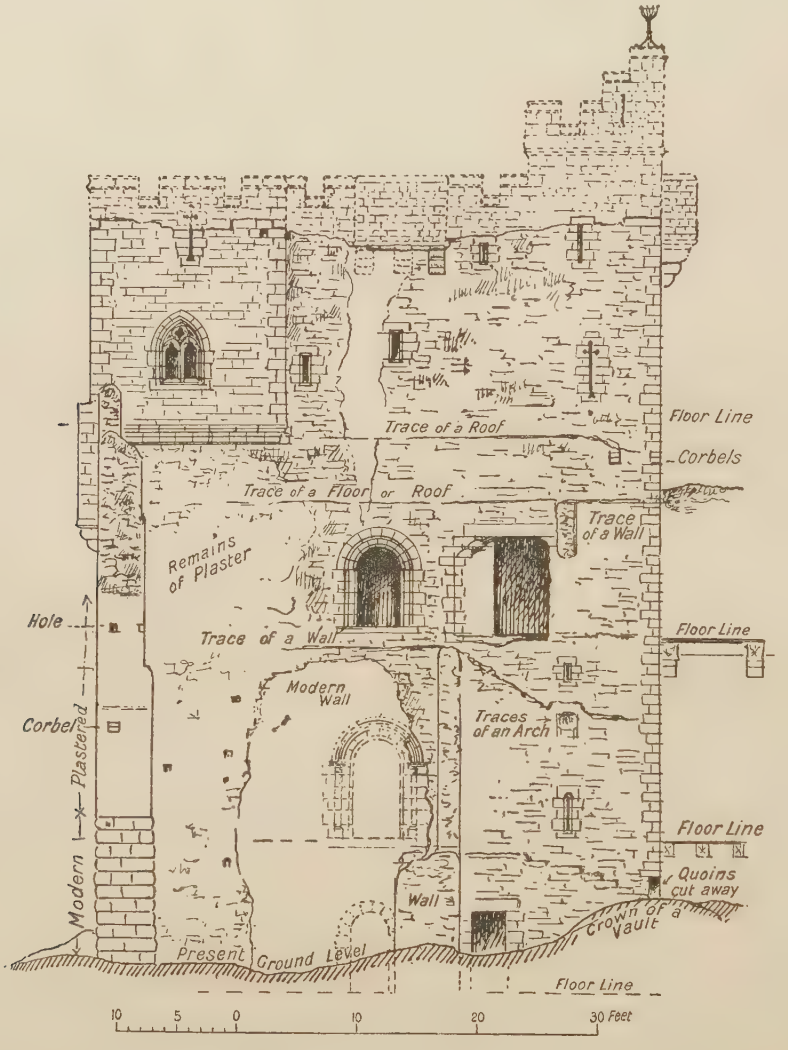


Fig. 7. Brougham Castle. East elevation of keep, with suggested battlements.

at which time I would suggest the keep was built. Here I may state that Mr. Clark calls it "Decorated," and states that the opening on the second floor was the original entrance, but he evidently sees a difficulty in getting down from such a height. The two windows on this floor are early thirteenth century, and large.

I think there is slight evidence that they have been cut in. On the next floor over the entrance is a plain semicircular-headed window or door with two orders with plain splays. I think it led from the second floor on to the leads over the entrance, or possibly to a room, as there is the trace of a roof having been just above it. Near it is the skew opening before referred to. The other windows on this floor are like those below. On the next floor at the south-east angle the wall projects for about 1 foot on a moulded course for some distance both on the east and south sides, with two well-carved grotesque heads under the moulding on the south side where it projects beyond the pilaster, and in this portion of the wall

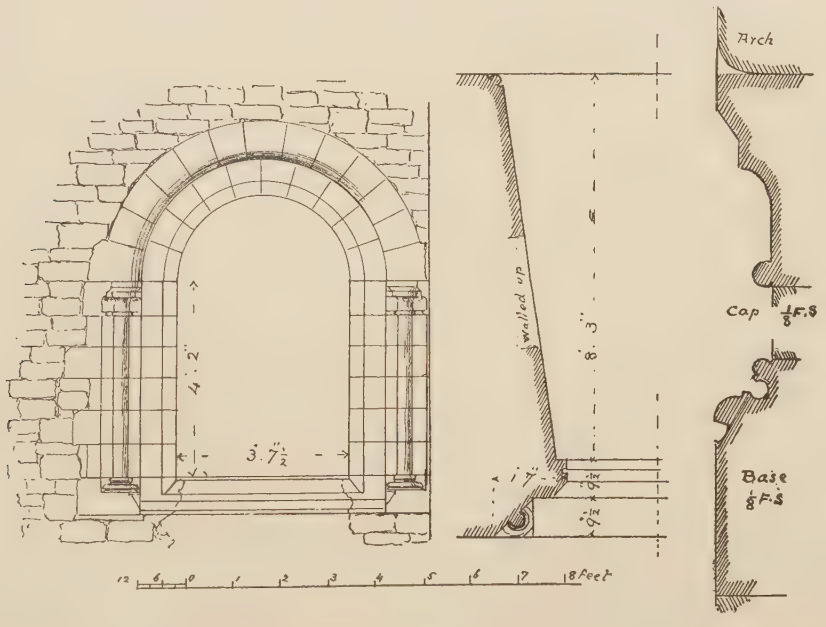


Fig. 8. Brougham Castle. First and second floor windows of keep.

there is a small but good fourteenth-century window as the east window of the oratory.

All the other windows on this floor are small, several being about 1 foot 6 inches square and high up, except that on the north face, which seems to have been a large one, but it is now much ruined. Buck in his drawing dated 1739 shows it as similar to those on the second floor of the gateway. But his drawing is not to be relied upon, though in this instance it is probably correct. At the north-west and south-west angles are long narrow arrow slits of thirteenth-century pattern. Above this floor are the remains of more arrow slits, and on each face three heavy projecting corbels, except on the east, where there is only one, and

now no trace of any others, but I think that originally it had three like the other sides. Above on the north-west corner, some distance in from the angle, a portion of the chimney still stands nearly to its entire height. Mr. Clark says that the turrets and parapet of the keep were standing in 1775, but Grose's drawings do not show much more than there is now, nor does Buck's, dated 1739, except that he makes the chimney an octagon like a turret. It is very difficult to assign a date to the exterior of this floor, but I am inclined to think that in the main the wall is of the same age as the part below, with windows and slits inserted later. There is no trace whatever of any change in walling all the way up. Of course the oratory part is thirteenth century, and there the walling is entirely different, being mostly ashlar work. Some stairs seem to have led from the entrance level down towards the north at one time, as there are faint traces of steps against the keep wall just above the vault over the inaccessible room, and also what looks like traces of a roof slightly sloping from the second-floor window down to a springer still existing over the staircase loop, above which is a small slit lighting a now blocked little recess off the staircase halfway up between the first and second floors. These stairs may have led to the curtain wall before the first gateway was built.

The keep is now entered through the ruined slit in the ground floor on the west face. This floor has had an added vault consisting of four quadripartite vaults resting on a central column. Three of the springers remain. It was probably added when the second gateway was built. Its weakness consisted in the fact that the four principal arches rested on the arches of the door and windows, as that is the only way I can see that it can have been done.

I may here quote Grose's description, which he takes from Hutchison's *An Excursion to the Lakes*, published shortly before he wrote his book. "The lower apartment in the principal tower is still remaining entire; being covered with a vaulted roof of stone, consisting of eight arches, which, as they spring from the side walls, are supported and terminate on a pillar in the centre." Access to this floor was obtained from the staircase and the narrow skew passage before mentioned, and a doorway in the middle of the east face. In the north-west corner is a blocked-up passage, but no doubt it led to a privy similar to those over.

The next floor was the entrance hall. It has been a fine room, with a large fireplace on the south side, and two large window. In that on the north side, on the west side of the jamb, is a cupboard, and on the other a blocked-up doorway to a small square chamber lit by a small Norman window. I could not get into this room, but it seems to have been plastered. The entry apparently was blocked up

by the Countess of Pembroke. What was the object of this little room, without getting in, is difficult to say. It may have been a well chamber, as there is no trace of any water supply anywhere in the keep. Of course there may be a well in the ground-floor room, now hidden by the heaps of rubbish all over the floor. The walls on this floor are 10 feet thick. The staircase has been entered by a door in a canted angle which runs the whole height of the keep. At the floor-level of the room are the remains of an arcade with attached shafts, about 4 feet high, with caps and bases and semicircular, or almost semicircular, moulded arches. This of course is also added work of the date of the vaulting below; I think that is about 1310. In the north-west corner is a doorway leading to a passage to the first floor over the second gateway; this has been cut through the Norman wall. The door originally led only to a privy, which still exists in that angle. The second floor also had a large fireplace in the south side, with two windows similar to those below, and on the east side the plain round-headed window or door over the hall door below. This room was not entered direct off the staircase, but by a short right-angled passage, in the ceiling of which a slab with a portion of a Roman inscription is built in. In the north-west corner is a passage and probably a privy similar to that below, but I could not get up to it. This wall is from 8 feet to 9 feet thick. On the staircase, halfway between the first floor and this one, is a small chamber with a slit looking east; access to it is now blocked up, but not recently.

The third and top floor room has all its angles canted; in the north-west one is a fireplace with about an 8 feet 6 inch opening. It has a flat arch, composed of thirteen joggle-jointed stones, and is quite perfect. In the opposite angle is an entry to the oratory. The cants on three sides are carried by moulded courses dying out in the angle; these were visible in the room below. There is also a moulded course all round the room on which the floor joists rested. Round three sides of the room is a passage in the thickness of the wall; whilst on the fourth, that is the east side, there is a passage from the stairs leading to a door, and also a small vestry off the oratory. From the staircase (the upper 6 feet of which is now ruined) the passage going round the keep is about 4 feet below that leading to

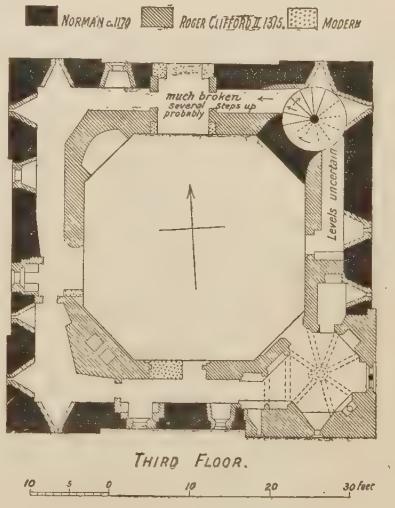


Fig. 9. Brougham Castle.
Plan of the keep or tower. Third floor.

the door. Just about the large north window, which may have been a late insertion, the floor of the passage is a good deal broken up, so that the levels are uncertain, but were probably the same level as the floor of the room and approached from the staircase by several steps, beyond that point it is fairly perfect. In this passage have been several doorways, and the various small windows and arrow slits before mentioned. The openings in the inner wall do not seem to have been large, therefore this room must have been somewhat dark, unless it was lit by any arrangement of dormers in the roof. Having traversed round the three sides of the keep we arrive at a very quaint little oratory, with a moulded arcade, with stone seats at the entry. The oratory itself is an irregular octagon, with an east window over the altar, or rather where the altar was. On the south side there is a recess with a piscina, and on the north an ambry; whilst next to this is the door to the vestry. The vaulting of the roof is very curious, as also the roofing of corbels and slabs over the arcaded part. The mouldings of the doorway from the room are somewhat elaborate, whilst still more so is the jamb and half arch that is left about the middle of the south side. This may have been an open arcade of three arches originally, or only two, one on each side of the chimney flues, which may have gone straight up and not been canted into the angle as I have suggested in my plan. The staircase continued up to the battlements, but now all the steps are broken. All this top floor has been much altered internally when the oratory was constructed probably by Roger de Clifford about 1315; and I think that whilst the outer wall is Norman, except the windows, the whole of the interior is of the later date. Possibly there always was a passage round in the thickness of the wall; if so it would be an easy thing to remodel the inside. The oratory locally is called "The Marble Chapel," why, I do not know, as there is no marble in it. It is also rather curious that the Countess of Pembroke in her diary omits to mention this oratory in her account of the castle. Perhaps being a strict Protestant she did not consider such a place a fit adjunct to her home, and therefore ignored it. She mentions "The Tower of Leaguer," which I think must be the keep, "The Greystoke State Chamber," perhaps that over the entrance gateway, and "The Painted Room," which may have been over the second entrance. She also mentions "The Pagan Tower," but by that I think she means the remains of the Roman camp, as there is no reason why the keep should have that name.

Mr. Clark says about the castle: "The keep, judging from internal evidence, and probably the ditches were the work of Robert de Vipont, very early in the thirteenth century. In the Decorated period the castle underwent great altera-

tions. The keep was probably raised a story, and an oratory included in the new work. The basement was vaulted, the first floor arcaded, and the fore-

Fig. 10. Brougham Castle. The oratory in the keep.

building so altered as to admit of an entrance on that floor. All the rest of the castle, gatehouses, domestic buildings, and the whole of the *enceinte* wall belong

to one general period, and are probably the work of Roger de Clifford, the first of his race, who held this property, and the husband of Isabel de Vipont, its heiress, in the reign of Edward I." A good deal of this statement is open to doubt, as I have endeavoured to show, and some of it is undoubtedly erroneous. So far from the castle being of two periods only, it seems to me that from the time it was built until it was finally dismantled by the Earl of Thanet, the grandson of the Countess of Pembroke, almost every owner did something either to strengthen or improve it.

XV.—*Garnier de Nablous, Prior of the Hospital in England, and Grand Master of the Order of St. John of Jerusalem.* *By* J. H. Round, *Esq., M.A.*

Read 29th January, 1903.

It is by the kind permission of the Dean and Chapter of St. Paul's that I exhibit the charter on the table.[a] This document is a grant, by the Prior of the Hospital of St. John in Jerusalem in England and the Chapter, of the church of Broxbourne, Herts, to the Bishop of London for a yearly payment of four marcs.[b]

The charter is sealed, and it bears the date of 1190, a date which, as I shall explain, is of some historical consequence. Although calendared so far back as 1883 by my friend Sir Henry Maxwell Lyte in his valuable report on the muniments at St. Paul's,[c] the charter seems to have been overlooked, for it was not found in that great repertory of all the charters of the Order,[d] published by M. Delaville Le Roulx, although he endeavoured to include all those that are in England.

The "capitular seal and counter-seal," as they are styled in the report of Sir Henry Maxwell Lyte, prove to be the Prior's seal with Garnier's *secretum* on the reverse. Impressions of the same interesting seal are appendant to a charter of Garnier (1189) in the Public Record Office.[e]

Garner[ius] de Neapoli, by whom this grant was made, is alleged to have

[a] *Muniments of the Dean and Chapter*, A. 28, No. 291.

[b] Broxbourne with its church had descended from the house of Grantmesnil with its heiress to her husband, the Earl of Leicester, and they had united in giving it to the brethren of the Hospital shortly before.

[c] Ninth Report Historical MSS. App. I. p. 3.

[d] *Cartulaire général de l'Ordre*, etc. vol. i. I called attention to its omission at the time, and it is now, I hear, inserted in a supplemental volume. Newcourt gave the text of the charter from the Register, Lib. A, which omits several witnesses (*Repertorium*, i. 809).

[e] Ancient Deed, A. 6708).

been the first Prior of the Order of the Hospital in England, and his subsequent history is plunged in confusion. Dr. Stubbs, in a learned note on him, has observed that "the received chronology of the Masters" of this Order "is in great disorder," and that the date of Garnier's accession to the office is a point "of some importance."[a] But if the succession of the Masters was obscure, that of the Priors of England is in even worse disorder.[b] Yet I hope to show that this confusion, so far as Garnier is concerned, can now at last be dispelled.

Only a few months ago there was published *A History of the English Hospitallers*, of which the authors are respectively styled "Genealogist" and "Librarian" of the Order. In this work I read of the Priors that "the list of these dignitaries commences with a Neapolitan" (p. 50). Now Garnier was not a Neapolitan, and the list does not commence with him. The rest of the statement may be accurate. It is true that "Neapolis" might stand for Naples, and that in Sir Henry's report he is styled "Garnier of Naples," but he derived his name, as Dr. Stubbs was aware, from what is now Nablûs, the Shechem of the Old Testament, the Sychar of the New, to which the Emperor Vespasian gave the name of Neapolis.[c] Nablûs was an important town in the kingdom of Jerusalem, and had its own line of *vicomtes*, who probably derived from it a surname like some of our sheriffs in England. Of this house, I imagine, Garnier was a cadet.

The accepted list of the Priors of England, as given in the *Monasticon*, places Garnier at their head, and dates him as occurring "before 1162." In a paper I had the honour of reading before the Society in 1898, I showed that the foundation of Clerkenwell Priory, the first house of the Order in England, has been dated much too early;[d] and so it was with Garnier. Instead of appearing "before 1162," he first appears in April, 1185, when he is found at Dover with the patriarch Heraclius and Roger de Moulins, Master of the Order, arranging with the Bishop of Winchester, in the presence of Henry the Second, the transfer of the Hospital at St. Cross at Winchester from

[a] *Itinerarium Peregrinorum et Gesta Regis Ricardi*, p. 372, in vol. i. of *Chronicles and Memorials of the reign of Richard I.*, edited by William Stubbs, M.A. London, 1864 (Rolls Series 38).

[b] It is based on a list found at the end of Cott. MS. Nero E. vi. the MS. from which was also derived the error as to the foundation of the Clerkenwell Priory.

[c] Mr. Robert Gladstone, junior, has kindly sent me confirmation of this statement from Vicomte de Villeneuve-Bargemont's *Monumens des Grands Maîtres* (1829), where we read that he is called "Garnerius Sirianus" on his funeral monument (vol. i. p. xi. and plate facing p. 47). Mr. Gladstone has made, I find, large collections for a history of the early Priors.

[d] *Archaeologia*, lvi. 223-8.

the Order, which had hitherto held it, to the bishop. The original agreement, in perfect preservation, is now at the British Museum, and appendant to it are the seals of the Bishop, of the Master, and of the Prior, Garnier himself attesting as Prior of the brethren in England, and being immediately followed, I would ask you to observe, by "Ego Alanus, frater Hospitalis, presbyter, interfui." In the charters granted by Garnier as Prior of England, I find this Alan occurring as the first witness sometimes as "fratre Alano" and sometimes as "fratre Alano de Sancta Cruce." The origin of his name is explained by the charter on the table, in which he similarly figures as first witness, but styles himself "custos" of the house "Sancte Crucis extra Wint[oniam]." We may add his name therefore to those of the Masters of the venerable hospital of St. Cross. It was he, we shall find, who succeeded Garnier as Prior of England.

Returning to Garnier, there have lately come to light two of his charters at the Public Record Office,[a] one of which is dated the morrow of St. Hilary (14th January), 1190. Another charter of his, as Prior in 1190, was exhibited before your Society thirty years ago.[b] But what I found in the archives at Rouen was a document which proves that he was already Master of the Order in December of that year,[c] when we find him at Messina with Richard. Accompanying Richard from Sicily to Cyprus, he attested the settlement of Berengaria's dowry, 12th May, at Limasol;[d] he successfully brought about the interview between Richard and the Emperor;[e] and it was to him that Richard, in June, entrusted the Emperor as a captive.[f] Therefore, as Dr. Stubbs observed, he could not have died, as alleged by the historians of the Order, in 1187, of wounds received at the battle of Hittin.[g]

[a] *Ancient Deeds*, A. 6708, 8990.

[b] 13th February, 1873 (*Proceedings*, 2nd Series, v. 447).

[c] *Calendar of Documents preserved in France*, p. 15 (Charter of 6th December, 1190).

[d] See Dr. Stubbs' note to the *Itinerarium* quoted below.

[e] "Mediante vero et plurimum satagente magistro Hospitalis Jerusalem, statutum est colloquium inter regem et imperatorem." (*Itinerarium*, 196-7).

[f] "Rex imperatorem commisit Warnero de Naplis summo magistro Hospitalis ad custodiendum." (*R. de Hoveden*, ii. 173. Compare *Benedictus*, ii. 657.) The Hospitallers kept him at their Syrian fortress of Merkeb or Margat.

[g] The *History of the English Hospitallers* (1902), already spoken of, accepts his death at that date, and suggests that the Prior of England must have been a brother of his! See p. 185: "Garnier de Neapolis is the first recorded Prior of England. He could not have been the Garnier de Neapolis, afterwards Grand Master, who died of wounds received at the Battle of Tiberias, A.D. 1187 . . . . . He was in all probability a brother of the Grand Master."

But what baffled that great historian was that at the battle of Arsûf (7th September, 1191), three months after the last mention of him in Cyprus, he is spoken of in the *Itinerarium* (p. 267) as a different person from the Master. Dr. Stubbs was the less able to explain this because Garnier appears again as Master of the Order in June, 1192. He therefore left the problem unsolved, as will be seen from this passage:

Garnier of Naplous is said by the historians of the order to have succeeded Roger de Moulins, the Master of the Hospital who fell at the battle of Nazareth [1st May, 1187], and to have died at Ascalon, July 6, 1187, of wounds received at the battle of Hittin. The authors of *L'Art de Vérifier les Dates* were aware that he was alive in Feb. 1191; but place the whole Mastership of Hermenger Daps and the beginning of that of Godfrey de Duisson between that date and the battle of Arsûf [7th September, 1191]. From Benedict of Peterborough (vol. ii. p. 657) and Bromton (c. 1203) we find that Garnier was Master in June, 1191. As Master of the Hospital he attested Richard's settlement of Berengaria's dowry, May 12, 1191, at Limasol; see Martene and Durand, *Amplissima Collectio*, i. 995; and we find from this passage [*Itinerarium*, p. 372] that he retained the office in June, 1192. Yet in our author's account of the battle of Arsûf, Garnier of Naplous is spoken of as a different person from the Master; see above, Lib. iv. c. 19. There can be no doubt that the received chronology of the Masters is in great disorder, and unfortunately the inconsistency of our author in this point does not serve to settle it. The Mastership of Hermenger Daps is certainly misplaced, for he writes as Master, to Leopold of Austria, in October, 1188. See Ansbert, ed. Dobrowsky, Prague, 1827, p. 5. The point is one of some importance.[a]

The explanation of this discrepancy is one of the curiosities of historical research. The *Itinerarium*, which baffled Dr. Stubbs, was elaborately shown by him, as its editor, not to be, as a manuscript alleged, a translation of a French original. But subsequently M. Gaston Paris, the distinguished French scholar, actually discovered in the archives of the Vatican the lost French poem of which our *Itinerarium* is, in the main, a mere translation.[b] And he was able to show that the Latin translator had misunderstood the passage about the battle of Arsûf, and that Garnier and the Master of the Order were one and the same person:

La traducteur latin, ayant mal compris le premier passage où figure Garnier, l'a distingué à cet endroit (p. 267) du maître des Hospitaliers;[c] cette erreur a embarassé

[a] *Itinerarium Ricardi*, 372, note.

[b] *L'estoire de La Guerre Sainte* (Documents inédits), 1897.

[c] I here give side by side the versions of the passage in question in (1) the French poem, (2) the Latin version of it in the *Itinerarium Ricardi*. It will be observed that the misunder-

M. Stubbs, qui, dans une note érudite (p. 372) a essayé de reconstituer les dates de la maîtrise de Garnier de Naplouse. Le texte français fait disparaître le difficulté qui l'arrêtait; il nous montre Garnier maître en 1191 comme en 1192. D'après M. Stubbs, Garnier était d'origine anglaise;[a] il n'était pas maître avant 1189, et on ne sait quand il mourut. Garnier mourut probablement le 31 Août, 1192; voir Herquet, *Die Grossmeister des Hospitalordens während dei Kreuzzüge* (Berlin, 1880), pp. 26-35.

He is last mentioned in the poem 3rd July, 1192, when as

> Li meistre des Hospitaliers
> Garniers, li curteis chevaliers

he severely rebuked Robert de Bruges for breaking the rules, as a knight of the Order, by charging on his own account apart from his brethren.[b]

All discrepancy thus disappears, and we are now able to assert that Garnier was Prior of the Order in England from 1185 to 1190, that in 1190 he became Master of the whole Order and accompanied Richard on Crusade, where the splendid achievement of his knights aroused the King's admiration.[c] Last men-

standing arose through a detail of punctuation (the stop after "Guarniers"), and the rhetorical amplification in the Latin should also be noted. It was similarly, by misunderstanding William of Malmesbury, that Wace (*Roman de Rou*), as I have shown (*Feudal England*, 414), evolved from the former's description of the shield-wall at the battle of Hastings the long and confused passage which has been held to describe a "palisade" of some kind.

Plus de vint miliers en poi d'ore	Tandem turbatim irruunt subito Turcorum
Sor l'Ospital erent a forge,	plus quam viginti millia; cominus clavis mal-
Quant li uns d'els clama "Saint Jeorge,	leantes, et gladiis; in Hospitalarios congemin-
Lairez vos nos issi confondre?"	ant ictus, contundunt, affligunt, et variis urgent
. . . . .	conatibus; cum, ecce! propemodum pene victus
C'ert de Napes freres Guarniers,	immanitate, unus eorum, frater Garnerius de
Li mestre des Hospitaliers.	Napes nomine, exclamavit voce magna dicens,
Cil vint al roi, poignant en haste	"Sancte Georgi, miles egregie, numquid nos sic
Si li dist. "Sire, l'en nos haste."	confundendos relinquis?"
. . . . .	. . . . .
	Ad hæc Magister Hospitalis, regem adiens, ait
	illi; "Domine rex, vehementer infestamur" . . . .

[a] This is not quite correct. Dr. Stubbs spoke merely of "The connection of Garnier with the English nation," *i.e.* as Prior of England.

[b] Compare the version in the *Itinerarium*, p. 372, where Dr. Stubbs assigns the incident, more correctly it would seem, to 12th June.

[c] See his charter of 5th January, 1194, in *Calendar of Documents preserved in France*, 469.

tioned in June, 1192, he is said in a German monograph on the Masters of the Order to have probably died at the end of August in that year.

Garnier's successor as Prior of England was Alan "de Sancta Cruce," who derived his name, as I have shown, from the Hospital of St. Cross, Winchester. It would seem that at the Michaelmas chapter of the brethren in 1190 Alan had not yet formally succeeded as Prior. He grants, in that chapter, a lease of land at Arundel as "ego frater Alanus *preceptor*," and Mr. Robert Gladstone has called my attention to the fact that he was then still using the seal of Prior Garnier. It is a singular circumstance that the British Museum has another charter of his,[a] which, although distinctly dated 1199, must belong to the same occasion. And in this charter also he is only styled "Preceptor."[b] The date "1199" is accepted as correct in the British Museum *Catalogue of Seals* (i. 855), where a footnote observes that "Bishop Alan died 19th May, A.D. 1196 (*Ann. Teuk.*), a date hard to reconcile with the seal and charter Cott. ch. vii. 5, unless there were two successive Priors of the name."

When the difficulty caused by the wrong date in this charter is removed, there is nothing to prevent our accepting the fact that brother Alan, the prior, was made bishop of Bangor in 1195, being consecrated on 16th May.[c] A charter of 1193, in which he styles himself "ego Frater Alanus Prior fratrum Hospitalis Jer' in Anglia," was exhibited before the Society in 1873.[d]

[a] *Cott. Chart.* vii. 5.

[b] Both charters are dated in the Michaelmas chapter in London, and both, as Mr. Gladstone has pointed out to me, are sealed with the seal of Prior Garnier. He had independently arrived at the conclusion that this charter must belong to 1190, in spite of the words "nonagesimo nono" being quite plain, on the ground that Gilbert de Ver had himself become Prior before 1199, in fact, *circa* 1196-7. My own ground for suspecting the date to be 1190 was that the names of the witnessing brethren are similar to those found in the charters of 1189-1190 (see Appendix of charters). Here are the names of those in Alan's two charters:

Add. MS. 7208 (1190).	Cott. Chart. vii. 5 ("1199").
"frater Alanus preceptor . . . . . fratre Matheo, fratre Willelmo, fratre Philippo, presbiteris; fratre Gilleberto de Ver; fratre Roberto filio Ricardi; fratre Radulfo de Palermo; fratre Samsone; Waltero clerico."	"frater Alanus preceptor . . . . . fratre Matheo; fratre Michaele; fratre Roberto parvo; fratre Reginaldo; fratre Gilleberto de Ver; fratre Roberto filio Ricardi; fratre Illeberto de Wilton; Waltero clerico."

[c] Mr. Gladstone has collected several passages from the chronicles recording the fact. The bishop, who died about a year later, is usually entered as "Alban" in the lists.

[d] *Proceedings*, 2nd S. v. 448.

I now append the names of the witnesses to some charters of Prior Garnier in 1189-1190, for comparison with those in the St Paul's charter, which are given at the close. They supply us with the names of leading members of the famous Order in England on the eve of the third Crusade.

[1189]

(1.)

Charter relating to Swarling Chapel in Petham Parish, Kent.

(Add. MS. 4527.)

Testibus: fratre Alano; fratre Matheo; Roberto de Lindes' preceptore Cantie; fratre Roberto filio Ricardi; fratre Hugone de Clahull; fratre Ilberto de Wilton; fratre Henrico Noel; Waltero clerico . . . . . mclxxxix. apud London.[a]

(2.)

Lease of Two Bovates at Linacre, co. Lancs.

(Add. Chart. 13,932.)

Hiis testibus: fratre Alano de Sancta Cruce; fratre Matheo; fratre Roberto Parvo; fratre Osberto de Nordfolcia; fratre S[a]lom[one]; fratre Briano de Lond[oñ]; fratre Hugone de Buiford; fratre Nicholao de Cadmel tunc magistro Eboraci; fratre Simone de Scoth[ia]; Waltero clerico . . . . . mclxxxix.[b]

(3.)

Grant of a Virgate at Mapowder, co. Dorset.

(Ancient Deed, A. 6708.)

fratre Alano de Sancta Cruce; fratre Matheo; fratre Roberto Parvo; fratre Osberto de Nordfolcia; fratre Salomone; fratre Briano de London; fratre Hugone de Buiford; fratre Nicholao de Cardmel tunc magistro Eboraci; fratre Simone de Scothia; Waltero clerico.[c]

(4.)

Grant of Half a Hide in [Temple] Grafton.

(Add. Chart. 21867.)

Hiis testibus: fratre Alano de Sancta Cruce; fratre Matheo; fratre Reimbaldo; fratre Philippo capellano; fratre Reinaldo de Wirec[estria]; fratre Roberto filio Ricardi; fratre Illeberto de Wilton; fratre Hugone de Buiford; Waltero clerico. 1189.

[a] *Cartulaire générale*, i. 552.

[b] *Cartulaire générale*, i. 552-3.

[c] The exact correspondence of the names in this and the preceding charter should be observed.

[1190.]

(5.)

GRANT OF LANDS AT BICKERSTAFF, CO. LANCS.

(Chetham Soc. Pub. xlvii. App. 190.)

fratre Alano; fratre Willelmo capellano; fratre Gilberto de Ver; fratre Roberto filio Ricardi; fratre Ilberto de Wilton; fratre Henrico de Dalbi; fratre Nicholao de Cardmel; fratre Willelmo de Yp[ra]; fratre Gilberto; fratre Ysaac; fratre Samsone; Waltero clerico. Anno Incarnationis Millesimo centesimo nonagesimo.[a]

(6.)

GRANT OF LAND TO THURSTAN DE BAKECHILD.

Hiis testibus: fratre Alano; fratre Matheo; fratre Willelmo capellano; fratre Gilleberto de Ver; fratre Roberto filio Ricardi; fratre Hugone de Clahulle; fratre Rogero de Waver'; fratre Ilberto de Wiltone; fratre Henrico de Dalbi; fratre Samuele; fratre Roberto de Leic'; fratre Briano de London; fratre Samsone; Waltero clerico. Anno Incarnationis domini M°C°XC°.[b]

(7.)

GRANT OF BROXBOURNE CHURCH.

(St. Paul's, A. 28, No. 291.)

Hiis testibus: fratre Alano cu [stode de domus][c] . . . . . Sancte Crucis extra Wintoniam; fratre Matheo; fratre Willelmo capellano de Lond'; fratre Roberto Parvo; fratre Gilberto [de[c] Ve]r; fratre Roberto filio Ricardi; fratre [Hu[c]]gone de Clahull; fratre Gaufr [ido de Waver'][c] . . . . . fratre Ilberto de Wilton; fratre Rogero de Waver'; fratre Roberto de Leic'; fratre Briano; fratre Samsone; Waltero de Hereford clerico nostro. Anno ab incarnatione domini M°C°XC°.

[a] I am indebted to Mr. Gladstone for the reference to this charter.

[b] *Proceedings*, 2nd S. v. 446-7.

[c] Document damaged. The chief gaps are supplied from the transcript in Cott. MS. Nero E. VI. f. 139.

XVI.—*Excavations at Caerwent, Monmouthshire, on the Site of the Romano-British City of Venta Silurum, in* 1902. *By* Thomas Ashby, *Jun., Esq., M.A., F.S.A.*, Alfred E. Hudd, *Esq., F.S.A., and* A. Trice Martin, *Esq., M.A., F.S.A.*

Read 19th March, 1903.

The excavations which were made in June and July of 1902 were included in the report of the work done in 1901.[a]

The excavations, of which the results are now to be reported, did not begin until 11th August and were continued until October. The greater part of House No. 4 had, however, been excavated in 1900, but our description of it was postponed until the whole should have been brought to light.

House No. 4 is divided from House No. 2 by a street paved with gravel 19 feet to 20 feet in width, which cannot be clearly traced between Houses Nos. 3 and 5, where the intervening space is much wider.

On the north side of Houses Nos. 4, 6, and 9 runs a street which is the prolongation of that which skirts the north wall of House No. 2 and divides it from House No. 7. This street is from 22 feet to 25 feet in width, and is pitched with large cobblestones, underlaid by a hard gravel bed, giving a total thickness of 1 foot 9 inches. It passes about 50 feet south of the church, measuring from the exterior of the old south aisle (or 60 feet from the chancel wall),[b] and would fall into the road leading to the south gate just at the point where the 25-inch

[a] See *ante*, pp. 119-152.

[b] Walls have been found in the churchyard which continue its direction.

Ordnance Map marks "Site of Cross."[a] A stone which is still preserved in the garden of Great House is possibly a portion of this cross.

The orientation of Houses Nos. 4 and 9 corresponds with that of the street (which skirts their north side and is practically parallel to the main road from the east to the west gate), and consequently with that of Houses Nos. 2, 3, 7, and 8; but Houses Nos. 5 and 6 do not agree with it, nor yet are they parallel to the south wall of the town, nor do they agree in orientation between themselves. We are debarred from supposing that they represent an earlier arrangement of the streets of the town unless we are prepared (which we are not) to abandon our theory as to the mound,[b] which, as far as we have been able to trace it,[c] is everywhere parallel to the town wall which superseded it. We must therefore suppose that after Caerwent had ceased to be a purely military station more space was at first available than was necessary, so that the first constructors of houses put them down in a somewhat haphazard fashion; and that it was only later on that the town as a whole was laid out in regular *insulæ*.[d]

It will be noticed that both these houses have been built with more care than the other two. House No. 5 is, in fact, the most solid edifice that has so far been discovered at Caerwent.

We now proceed to describe the houses in detail.

House No. 4.

House No. 4 has a simple ground plan, the rooms being arranged upon two sides of a large courtyard,[e] without any corridors.[f] The walls are not as a rule

[a] The only authority which we can find for the existence of this cross is the statement made by Octavius Morgan (*Archaeologia*, xxxvi. 426 and Plate XXXVI.), who does not give any reasons for his assertion.

[b] *Ante*, p. 139.

[c] It is wanting in some places west of the north gate.

[d] This, as far as we can tell at present, seems to have been the case; and supposing that the arrangement of streets which we have brought to light reproduces itself in other parts of the city, we should have it divided into twenty *insulæ* by three roads (including the high road) from east to west, and four from north to south. The progress of the excavations seems to render this arrangement increasingly probable, but we must decline to speak with certainty on the subject.

[e] The courtyard was not apparently paved, but the natural gravel bottom was reached at about 3 feet 6 inches below the grass level.

[f] The dimensions of the several parts of this house, as numbered on the plan, are as follows:

preserved to any height in the west wing, and it is therefore not easy to make out how the various rooms were entered, though Rooms 1 and 4 may have led into Room 5, Room 5 into Room 6, and Room 6 into the courtyard. This, however, is pure conjecture, as only gaps in the walls, but no actual doorways, were found. No traces of floors were discovered, except in Room 6, where a gravel floor was visible in places. Room 3, from its shape and size, was probably a latrine.

The south wing is in a rather better state of preservation, and Room 11 still retains in its eastern portion a pavement of *tesseræ* of old red sandstone, with a few of brick interspersed. The slight divergences on this side from the orientation of the rest of the house may be due to a desire to approximate in some measure to that of Houses Nos. 5 and 6.

The northern portion of the east wall of the courtyard is evidently intended to reconcile as far as possible two different lines, of which it is clear that that of the west wall of House No. 6 is the older. The north-east angle is rounded.

House No. 5.[a]

This building may in later times have been connected with House No. 4, but in origin at any rate it was quite distinct from it. Its orientation is different and its construction dissimilar, its main walls being no less than 3 feet thick above the foundations[b] and very solidly built (fig. 1). At present it is almost entirely occupied by hypocausts, but unmistakable traces exist on the south wall of Room 1 of plaster painted red, and obviously intended for decoration, which, from the level at which it is, cannot possibly be supposed to belong to a room above the hypocausts, and must consequently date from a period when the house was not yet so heated.

(1) 16 feet by $12\frac{3}{4}$ feet; (2) $6\frac{1}{2}$ feet by $10\frac{1}{4}$ feet; (3) $6\frac{1}{2}$ feet by $2\frac{1}{4}$ feet; (4) 7 feet by $5\frac{3}{4}$ feet; (5) 7 feet by $5\frac{3}{4}$ feet; (6) $15\frac{1}{2}$ feet by 35 feet; (7) $15\frac{1}{2}$ feet by $12\frac{1}{2}$ feet; (8) $22\frac{3}{4}$ feet by $12\frac{1}{2}$ feet; (9) $23\frac{1}{2}$ feet (north wall), $21\frac{3}{4}$ feet (south wall), by 13 feet; (10) 11 feet by $10\frac{1}{2}$ feet; (11) $13\frac{1}{4}$ feet by $18\frac{1}{2}$ feet. The courtyard measures 73 feet by $71\frac{1}{2}$ feet (average measurements).

[a] The dimensions of the spaces as numbered on the plan are as follows: (1) $16\frac{1}{2}$ feet by $12\frac{1}{2}$ feet; (2) $16\frac{1}{2}$ feet by $6\frac{3}{4}$ feet; (3) $16\frac{1}{2}$ feet by $14\frac{1}{2}$ feet; (4) $16\frac{1}{2}$ feet by $14\frac{1}{4}$ feet; (5) $8\frac{1}{2}$ feet by 9 feet; (7) $16\frac{3}{4}$ feet by $9\frac{1}{2}$ feet; (9) $13\frac{1}{4}$ feet by 12 feet; (10) $22\frac{1}{4}$ feet by 20 feet; (11) $22\frac{1}{4}$ feet by $2\frac{2}{3}$ feet; (12) $20\frac{1}{2}$ feet by $10\frac{3}{4}$ feet; (13) $21\frac{1}{2}$ feet by $81\frac{1}{2}$ feet.

[b] A cut made outside the east wall of Room 1 shows that the wall has two offsets, giving a total increase of thickness of 6 inches immediately below the level of the upper floor, while $4\frac{1}{2}$ feet lower comes a foundation of rough stones 1 foot deep, projecting outwards 6 inches more.

The only other signs of reconstruction are to be found (a) in the remains of a drain [a] (the beginning and end of which have been cut off by the present walls of the room) at the north end of Room 1, and (b) in the wing walls dividing Rooms 3 and 4, which were originally closer together, if indeed they did not form one wall, but were afterwards (probably when the hypocausts were put in) shortened to about 3 feet on each side. The plan of the building is by no means easy to

Fig. 1. Caerwent. Part of House No. 5.

understand, as a good deal of it has been quarried for the sake of building material, and the walls are not preserved above the level of the floors of the rooms except in a very small degree. It would seem necessary to assume the existence of a room (numbered 6 on the plan) to the south of Room 5 (though none of its walls is preserved), as a floor of gravel concrete was found there, which probably was the lower floor of a hypocaust like the rest.

[a] This drain measures 10 inches wide by 9 inches deep, and the length preserved is 11 feet.

The west walls of Rooms 2 and 7 have similarly disappeared, and also considerable portions of those of Room 8 and of the space numbered 11.

At the north end we have a small rectangular space, measuring 4 feet by 4½ feet, approached by an entrance only 1 foot 8 inches in width, which must have been reached by the narrow alley at the south-east angle of House No. 4, and which was obviously sunk below ground, as its side walls are faced on the inside only.

Room 1 has no remains of any hypocaust, but has a massive floor of two layers of large sandstone blocks, which are flush with the concrete floors of Rooms 2 to 4. An earlier drain at the north end of the room has been already referred to.

Room 2 is separated from Room 1 by a wall in which was a flue opening about 3 feet in width, with tiled sides; the removal of some of the tiles prevents the measurement from being more accurately taken. It will further be noticed that in this room, as in Rooms 3 and 4, the *pilæ* are preserved (as a rule to a height of three or four tiles one upon the other)[a] on the west side only, whereas upon the east side none is preserved and only three or four are traceable. This may perhaps be taken to indicate that the western side of this range of rooms was filled up with rubbish, and was therefore not disturbed by those who removed the tiles from the east side, though the entire removal of the west wall of Room 2 may invalidate this supposition as far as that room is concerned.

The only trace of the upper floor is to be seen in the north-east angle of Room 2, and its undersurface lies at no less than 3 feet 10 inches above the level of the lower floor, its thickness being 10 inches. The *pilæ* of a hypocaust are not as a rule more than 2 feet in height, and this is the height advised by Vitruvius[b] though a height of 3 feet 3 inches was noted in the *pilæ* (composed of tiles) of a hypocaust of the baths at Brecon,[c] and in the partly excavated remains of a villa near Rome there is a hypocaust of which the *pilæ* must have been about as high, being composed of three or more socketed drain pipes, each about 1 foot 1 inch in length, and not always fitted into one another.[d] In the baths at Wroxeter this height seems in one case to have been even greater: from the level of the thres-

[a] The maximum is six, in the north-west angle of Room 3.

[b] V. 10 (11) 2. *Cf.* Marquardt, *Privatleben der Römer*, 284.

[c] *Archaeologia*, vii. 205.

[d] See *Papers of the British School at Rome*, i. 165.

hold on the east side of Room 6 in Mr. Fox's plan[a] to the floor on which the *pilæ* stood the drop is about 4 feet 10 inches, which, allowing for the thickness of the floor, would give about the same height to the *pilæ* as in the case at present under notice. In the baths now (1903) being excavated at Silchester the tallest *pilæ* measure 3 feet, but they are not standing to their full height.

Besides Rooms 2, 3, and 4, Room 5 had also a hypocaust with *pilæ* of tiles, the heat being obtained from Room 3 by an opening in its east wall. Room 6 has been much ruined, and little can be made of it, but Room 7[b] seems to have had a channelled hypocaust, to judge from the triangular mass of concrete in its north-west angle, though the aperture between it and Room 4 is very small, while Room 10 must have had a hypocaust of tiles, to judge from the fragments of square tiles discovered in it and from the existence of a stoke-hole opening, 2 feet in width, in its south side, though no traces of the *pilæ* can be seen upon its concrete floor.

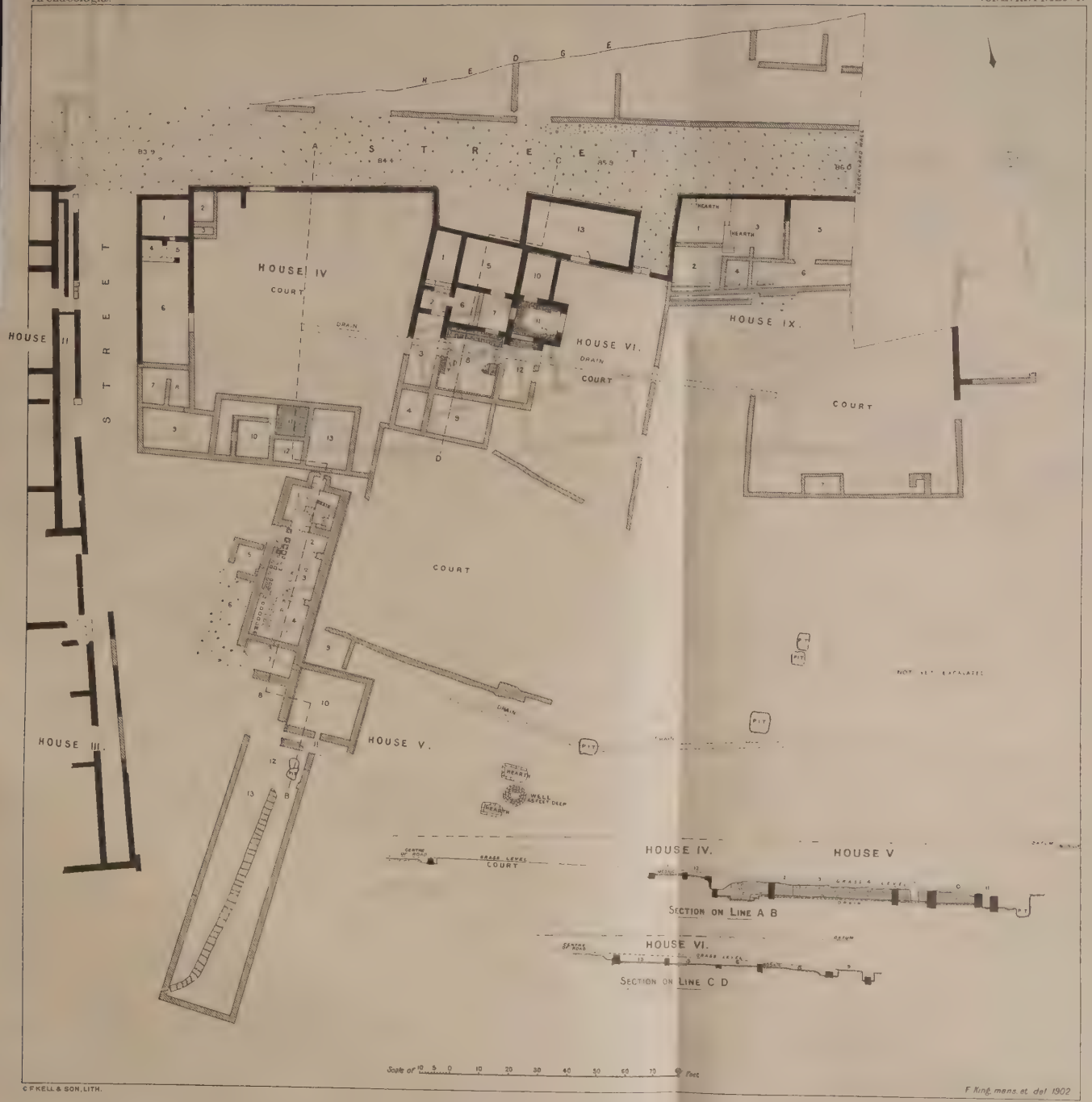
In all these rooms, too, masses of floor concrete, burnt earth, and fragments of the tiles were found in profusion. The tiles were as a rule fixed to the wall by a nipple projecting from the cement lining of the wall and fitting into the tile, though some were fixed by iron T-bolts. The latter were longer and narrower than the former, measuring about 14 inches long by $4\frac{1}{2}$ inches square, as against 6 inches long by 7 inches by $3\frac{1}{2}$ inches. The most common type of scoring upon the side that had to take the wall plaster, which decorated the interior of the room, is the lozenge shape.

The drain referred to as starting in Room 1 runs straight through Rooms 2, 3, and 4. (See plan, Plate XXVI. and fig. 1.) In Room 2 it has a smaller lateral drain on each side, while in Room 3 it has two such feeders on the east and three on the west. Into the central one of the latter falls a drain passing through the centre of Room 5, but with this exception, none of the lateral drains can be traced beyond the inner side of the walls of the rooms.[c] In Room 4 are no lateral drains. The main drain passes through the wall of this room by an opening intended probably to let heat as well as water into the room. The top of it is 1 foot

[a] *Guide to the Roman City of Uriconium* (1902).

[b] Here was discovered a small piece of coal, 2 feet 1 inches below modern grass level. Soot was also found upon the floor.

[c] The main drain measures 11 inches wide by 9 inches deep, the lateral drains 8 inches wide by 9 inches deep. Both were originally roofed with tiles or old red sandstone slabs, which are well preserved in the case of the lateral drains.



C.F.KELL & SON, LITH. F. King, mens. et del. 1902

CAERWENT. PLAN OF HOUSES. IV. V. VI AND IX.

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3 inches above the floor of the hypocaust, and it is 1 foot 5 inches wide at the bottom, and 9 inches at the top, the sides being formed of three stones on each side gradually converging, until they are covered by a lintel 1 foot 3 inches long

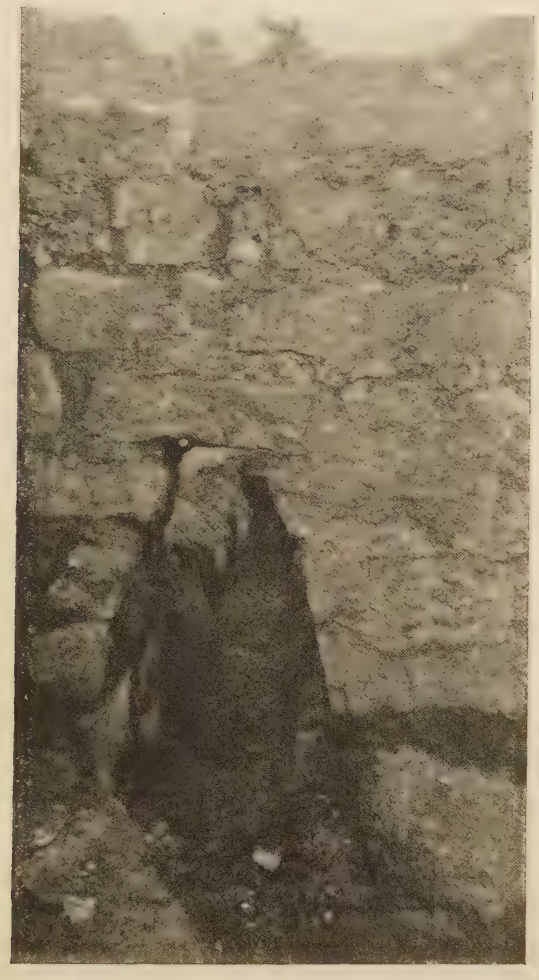


Fig. 2. Caerwent. Drain outlet in House No. 5.

(fig. 2). This style of construction is a quite natural one, and it appears also in the stokehole of Room 10. When found on a larger scale it has till lately been supposed, with what foundation we need not inquire here, to argue a very early origin, dating from the time when the principle of the arch was unknown. But that arches were already constructed at a very remote period in Egypt at any rate is shown by the discovery of an arch in the tomb of a king of the Third

Dynasty,[a] while, if this be considered hardly to the point, there are several instances in Italy of the use during the Roman period of the style of which we have been speaking.

After passing through this aperture the drain curves sharply round as it passes through Room 7, and enters Room 10 at its north-west corner; here it turns again at a right angle, follows the western wall of Room 10 to the south-west corner, passes through its southern wall, and through the west end of the south wall of the space numbered 11, which must have been an approach to the stokehole of Room 10, and then falls into a pit. This pit was of irregular outline, but nowhere reached a depth of more than 8 feet below the grass level, and the discoveries made in excavating it were disappointing, no pottery or other objects of any importance having been found. Into this pit also opens a rectangular hole 1 foot by 8 inches, which passes through the east wall of the space numbered 12, but no drain can be traced further to the east.

The overflow from this pit seems to have been taken by a large drain 1 foot 5 inches wide by 2 feet high, floored with gravel and roofed with slabs of old red sandstone.

This drain contains too many Roman objects, coins, fragments of pottery, etc. to have been merely a modern field drain, though one cannot but be surprised at the way in which it meanders through the long narrow enclosure (No. 13). This enclosure is in itself a remarkable piece of construction, the object of which is quite uncertain; it comes much closer to the south city wall than any other building in this part of the town.

The drain has an irregular exit through the west wall of this enclosure close to its south-west angle, but we were unable to trace it any further, or to find the cesspit into which it must have fallen. The slope of the ground forbids the supposition that it also drained into the pit at its north end.

To the east of House No. 5 is a large open court subdivided by rough irregular foundations of later walls, two of which help to form the space numbered 9 on the plan. Part of it seems to have formed a yard attached to House No. 6, while the rest may have belonged to House No. 5. In this space, 56 feet to the east of Room 10, is a well, 45 feet in depth from the top of the stonework, which begins at 4 feet below the modern grass level, to the solid

[a] Garstang, *The Third Egyptian Dynasty*, plate xiv. *Cf.* also Mahásna and Bêt Khallâf (7th memoir of Egyptian Research Account, 1902, plate 6 and p. 9).

limestone rock at the bottom. The lining is rough drywalling throughout, strongly built and about 3 feet in thickness, the diameter of the well being 2 feet 2 inches at the top and 1 foot 6 inches at the bottom. Little was found in it during the difficult and dangerous operation of clearing it except remains of the wooden bucket with iron handle and rims, some bones of animals, and a few fragments of pottery. Two hearths built of sandstone blocks, showing considerable traces of burning, were found four feet north and south of the well respectively. Nothing was discovered that gave any clue to their use.

North of the well there was found a series of pits dug in the natural clay, two of which are in communication with a drain running east and west, about 2 feet deep, 2 feet across at the bottom, and 4 feet at the top, also cut in the clay. The pits are of various sizes; one of them, just north of the drain, into which it overflows, is as much as 11 feet deep and 6 feet 6 inches square, being cut down to the solid rock. That which lies in the line of the drain is 3 feet 9 inches deep from the bottom of it. The two north-east of the large pit, which overflow into one another, but not into the drain, are respectively 6 feet 4 inches and 4 feet 6 inches square. Some pottery and bones were found in these pits, the object of which is quite uncertain.

Very little plaster was preserved in House No. 5, and what was found was mostly either plain red, or white with a thin red line; in Room 10 some with red, mauve, and yellow lines on white ground also occurred.

One would think House No. 5 must have been used as a series of baths, even if that were not its original object. Room 1 would probably be the stokehole or *praefurnium*, as it was, even more than the other chambers, full of burnt material and soot. Rooms 2, 3, 4 would then be the hot bath,[a] the *tepidarium* and the *caldarium* respectively, No. 5 perhaps the hot bath attached to the *caldarium*, Nos. 7 and 10 the *apodyteria*, though No. 7 can have been only very slightly warmed and perhaps contained the cold, or nearly cold, bath, and No. 8 the *frigidarium*.

It should not be forgotten in this connection that the small private baths discovered in Caerwent, in the south-east corner of the city, by Mr. Octavius Morgan in 1855[b] are taken as the best available example of a building of this sort by Marquardt in his *Privatleben der Römer*, p. 292. These have in Room H an unmistakable *laconicum*.

[a] Room 2 is not a *laconicum*, for the opening between it and Room 3 is too wide.

[b] *Archaeologia*, xxxvi. 432-437, and Plate XXXVI.

House No. 6.

This house is, as we have already seen, not orientated with the street which passes to the north of it; and, from this fact and from the regularity of its construction, most of the rooms being nearly, if not quite, rectangular, it may perhaps be assigned to a fairly early period.

It consists simply of three parallel[a] ranges of rooms, for one cannot suppose that the western range, Rooms 1 to 4, formed the corridor, as the crosswalls are too high to be mere sleeper walls; and there is no direct communication with some of the rooms on the east. None of these rooms contains anything of importance, and only in Room 3 is a gravel concrete floor preserved.[b] Room 1 seems to have led into Room 2,[c] and Room 2 into Room 3, while the walls of Room 4 are not preserved above the level of the foundations. There was apparently no access from the courtyard of House No. 4, though a space broken through the middle of the west wall of Room 3 for a modern water pipe prevents absolute certainty on this point from being attained. Nor could Room 5 be entered from Room 1, while the east walls of Rooms 3 and 4 are too dilapidated to retain traces of doorways. Room 6 was accessible by a doorway from Room 2. The central range (Rooms 5 to 9), with the three rooms to the east of it (10 to 12), is in a fairly good state of preservation. Room 5 has its walls standing to a height of about 2 feet; the dado of painted plaster is still preserved. It is similar in character to that found in House No. 7, described and illustrated in the last Report;[d] but here there is no attempt at architectural perspective, the dado consisting simply of panels of varying size, divided by bands of red bordered with white. A tracing was made of the best preserved portion; it consists of a

[a] The dimensions of the rooms are as follows: (1) $8\frac{1}{2}$ feet by $19\frac{1}{4}$ feet; (2) $8\frac{1}{2}$ feet by $6\frac{1}{2}$ feet; (3) 9 feet by $24\frac{1}{2}$ feet; (4) 9 feet by 13 feet; (5) 19 feet by 16 feet; (6) $7\frac{3}{4}$ feet by 12 feet; (7) $9\frac{3}{4}$ feet by $11\frac{3}{4}$ feet; (8) $19\frac{1}{4}$ feet by $21\frac{1}{4}$ feet; (9) $19\frac{1}{2}$ feet by $13\frac{1}{4}$ feet; (10) $9\frac{1}{2}$ feet by 15 feet; (11) $14\frac{1}{2}$ feet by 12 feet; (12) $9\frac{1}{2}$ feet by 21 feet; (13) 35 feet by $16\frac{1}{2}$ feet (average width).

[b] In the north-east angle of Room 1 was found a perfect pot of black ware bedded into clay.

[c] The northern of the two walls is the earlier in date, but no traces of its prolongation either east or west could be found, so that it is merely a local reconstruction, and the width of the doorway was the same as in the later wall, 5 feet 4 inches.

[d] *Ante*, Plate XII.

greyish white base, 3 or 4 inches wide, next the floor, above which is a light red band $2\frac{1}{4}$ inches wide, bordered above by a white band $\frac{1}{2}$ inch wide. This red band above the greyish white base is continued the whole length of the tracing (about 10 feet), and forms the lower border of the frames enclosing the panels. Of these the first panel is light red with yellow blotches, the second ochre yellow with a few blotches of light and dark red and white, the third ochre yellow with red and white blotches, and the fourth light red with a few large yellow spots. These panels remain to an average height of 1 foot 2 inches, and measure in width (1) 3 feet $8\frac{1}{2}$ inches; (2) 1 foot 11 inches; (3) 3 feet $4\frac{1}{2}$ inches. Panel No. 2 has an inner frame of bluish grey 1 inch wide bordered with white inside the red bands, and a similar blue grey band edged with white is visible to the left of Panel No. 1, which, itself, has no inner frame. The whole wall is splashed with large blotches of colour, apparently roughly put on with a wet brush after the rest was painted, as they appear on the borders as well as on the panels. The colours are not unlike those of the upper layer of plaster in the panelled room of House No. 7, and are therefore probably late work, but here another coat of plaster, which has almost entirely disappeared, has been superposed at a later period. The floor is of hard gravel concrete, as are also the floors of Rooms 6, 7. and 10.

Room 5 has a well-defined doorway into Room 7, but had no entrance into Room 6, as the edge of the plastering on the north wall of this room shows, while the wall between Rooms 6 and 7 is worn down to floor level, so that the position of the doorway, which must have existed to give access to Room 6, except on the improbable supposition that it could only be entered from Room 2, is uncertain. Room 7, which must have been a kind of lobby, also led into Room 11 and Room 8; the latter had a large mosaic pavement, of which some traces remain, with a margin of old red sandstone *tesseræ* with a few stray brick *tesseræ* among them. The key pattern border, black on white, is well preserved on the north side, and traceable on the west, but it was never carried round the east side, which had a guilloche pattern border. The middle of the pavement was occupied by geometrical designs: the *tesseræ* were white, blue-grey, red, and yellow. The level of the pavement has sunk except where it rests upon the stone footing of the north and east walls. The destruction of its northern portion is due to the laying of a water pipe a few years back, while on the south cultivation has so reduced the level of the ground that it is only 5 inches above the level at which the pavement would have reached the south wall of

the room. The floor of Room 9 has in consequence entirely disappeared, and the doorways which probably gave access to it from Rooms 4 and 8 are not traceable.

Room 10, the walls of which are lined with rough uncoloured plaster, leads into Room 11, which has been enlarged by an extension eastwards, it having originally been of the same width as Rooms 10 and 12. A doorway is still traceable[a] in its earlier east wall, of which the threshold is 5 inches lower than that in the later wall, which is 7 inches below the pavement of the later room. This extends over the whole, covering entirely the earlier east wall; it is of brick *tesseræ*, with a few of old red sandstone interspersed. In one case a small piece of a scored flue tile has been made use of. The doorway at the east end of Room 11 leads into a yard, originally paved with a gravel concrete floor, most of which has perished, and enclosed by rough irregular walls, not preserved above foundation level. In this yard against the south end of the east wall of Room 10 the bottoms of two pots of black ware were found, the lower fixed into the ground, the upper placed upon it; and 6 feet further north another practically perfect measuring 7 inches in diameter in the mouth, and 1 foot 1 inch in height. Yet another was found outside the east wall of Room 12 at its north end. Nothing but fine earth was found in any of them, and why they were placed there is doubtful; possibly they were used to contain birds' food, they were hardly strong enough for flower pots.

Room 12 is reached from Room 11, and may have led into the courtyard on its east side; it also contained a mosaic pavement, which has almost entirely perished.[b] Only the border of old red sandstone *tesseræ* and one or two lines in black and white remain.

At the north-east angle of the house is a large room or space (numbered 13 on the plan) with a gravel concrete floor. It was entered from the courtyard by a doorway 6 feet 6 inches in width, paved with sandstone slabs, with a rough step of the same material just inside the room. In the south-west angle of this a large hoard of coins was found, of which a detailed description will be given in a later report. They number between seven and eight thousand, and range in

[a] The earlier gravel floor concrete is also visible where the later pavement has perished, but its level is difficult to fix.

[b] In the yard just outside this room two fragments of a column, 1 foot in diameter, were found; the first was 2 feet $6\frac{1}{2}$ inches long, with a dowel hole, 2 inches square, at each end, the second 1 foot $2\frac{1}{2}$ inches, with a dowel hole at one end only, the other being broken.

date from Gallienus to Honorius, A.D. 253 to 423. Of the two or three thousand which have been examined more than one-third belong to the reigns of Theodosius and his two sons. Nearly all are the so-called *minimi*, copper coins of fourth brass size.[a] They are mostly in very poor condition, having been badly burned, and of about one-third it is impossible to make out the reigns to which they belonged. The hoard did not contain any coins of Carausius or Allectus and only a few of Constantine the Great. With this hoard was found an iron hoop, 11 inches in diameter, made of a double band of iron, $1\frac{1}{8}$ inch in width. From its shape it is clearly the hoop of a bucket, and a little wood still adheres to it. It is quite possible that the coins had been placed in the bucket for concealment. Another much smaller ring was also found, 6 inches to 8 inches in diameter, also a lead steelyard weight, weighing $13\frac{1}{4}$ ounces, a pair of iron sheep clippers, to which one illegible coin adheres, part of a horse's bit (?), and some charcoal (small twigs). The floor of the room is only 1 foot 8 inches below grass level.

In this room were also found three fragments of the capital of a column with the astragal and part of the drum, which fitted together and gave a total length of 1 foot 11 inches. The diameter of the column was 7 inches, and the abacus was $11\frac{1}{2}$ inches square.

Outside its north wall a large heap of common pottery was found.

To the east of this room, and in line with its south wall, a doorway gives access to the street from the court of House No. 6, opening into an alley about 11 feet in width, paved with pebbles. The doorway was for a single door about 5 feet in width; the stone threshold blocks, with a pivot-hole on the east side, $4\frac{1}{4}$ inches in diameter, the doorstop on the west, and the slits for the wooden framework on each side, are all well preserved. To the east of this doorway was found a finely-moulded double cornice block, measuring 1 foot $10\frac{1}{4}$ inches long by 2 feet $10\frac{1}{2}$ inches wide over all, and 6 inches thick (fig. 3). It was not *in situ*, of course, and whence it came is doubtful, possibly from the west gate of the city, or from the important buildings which there is reason to believe existed on the north side of the street. An earth drain, apparently of post-Roman date, runs east and west through the southern portion of House No. 6 and the courtyard of House No. 9. It was not detected in the excavations of 1900, so that its western prolongation is uncertain, while on

[a] See Marquardt, *Römische Staatsverwaltung*, ii. 33.

the east it ends abruptly near the churchyard wall. It was of about the same

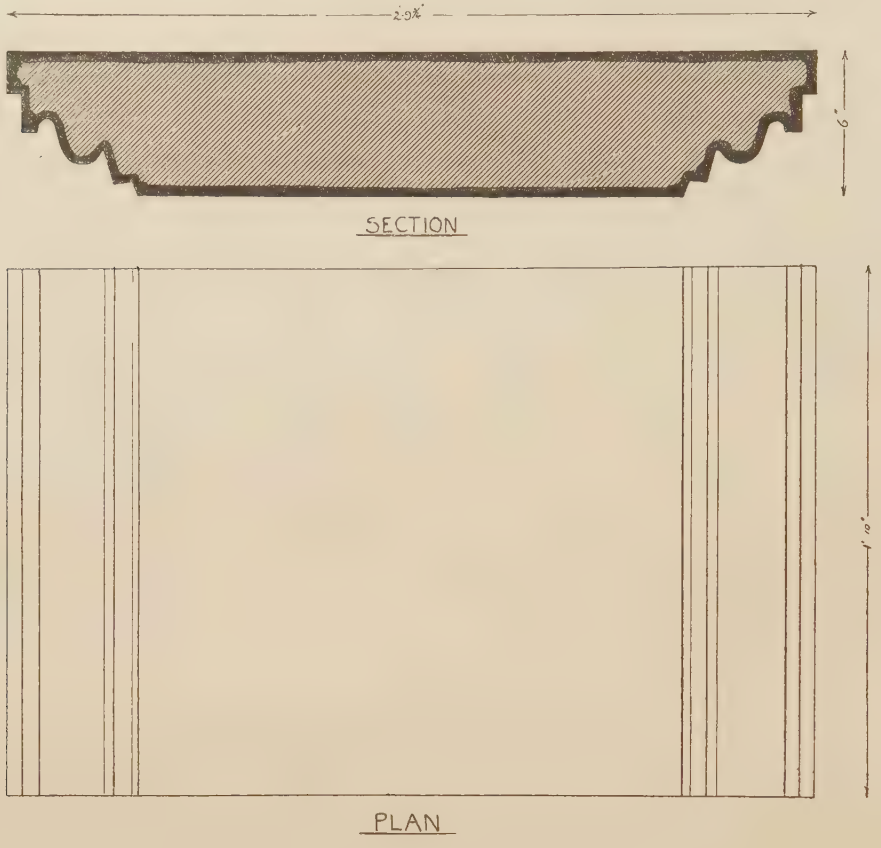


Fig. 3. Caerwent. Cornice block found in House No. 6. ($\frac{1}{8}$ linear.)

dimensions as that above described, but had no connection with it. Its line was followed by the modern waterpipe before referred to.

House No. 9.

To the east of Room 13 of House No. 6, the line of the street[a] is once more taken up by the north wall of House No. 9.[b]

[a] The street is here 22 feet in width, as against 25 feet opposite the centre of the courtyard of House No. 4, and 23 feet at its north-east angle; while between House No. 7 and House No. 2 it is 18 feet to 20 feet wide, though in the earlier state of the north wing of House No. 2 it must have been about 4 feet narrower. See *ante*, p. 127.

[b] The dimensions of the various spaces as numbered on the plan are as follows: (1) 15 feet by

This building has been much destroyed, and several hearths, one of which has sides of old red sandstone slabs, have been inserted at a later time, resting upon the wall that divided Room 1 from Room 3, which must therefore have been levelled down at the time the hearths or furnaces were in use. The floors are mostly of good gravel concrete, destroyed in some places: otherwise there are hardly any traces of the original internal arrangements of the house. Perhaps there was once a hypocaust in Room 1, as some rectangular flue tiles were found here. On the west side of Room 4 a large deposit of iron objects was found, including a hammerhead, many strips of iron, some of which are pierced with round holes for nails, and must have served as bands for door-hinges, etc. nails, and the fragments of a small bronze vase. These are almost certainly of Roman date; the bronze vase at any rate belongs to the Roman period.

The southern portion of the house has been reconstructed, and the older south wall, marked in outline on the plan, can still be traced. In the later south wall there is a wide doorway paved with old red sandstone slabs, leading out on to a space, some part of which was pitched. To the south of this wall again is another, only about 1 foot distant from it, connected probably with others further to the south.

To the north of the street which bounds Houses Nos. 4, 6, and 9, on the north we have only a narrow strip at our disposal, while on the east of House No. 9 the churchyard wall precludes the completion of the excavation of the north-east portion of this building. In the south-east corner of the courtyard is a small space with an aperture in the north-east corner $7\frac{1}{2}$ inches wide. Its purpose is quite uncertain: it is conceivable that it was a small furnace, but no traces of burning were found in it.

To the east of House No. 9, and south of the churchyard wall, are other buildings which have not as yet been completely excavated, and which will be described on another occasion. Nothing worthy of remark was discovered on the north of the road, and the remains of walls which we have found there are much ruined. Close to the churchyard wall we have found no less than four human skeletons, but these are probably the remains of persons who "have died unbaptised, or excommunicate, or who have laid violent hands upon themselves," and were therefore buried just outside the consecrated area of the churchyard itself.

15 feet; (2) 16 feet by 15 feet; (3) $17\frac{1}{4}$ feet by 20 feet; (4) $7\frac{1}{4}$ feet by 10 feet; (5) 20 feet wide, length not ascertained; (6) 9 feet to $6\frac{3}{4}$ feet wide, length not ascertained; (7) $11\frac{1}{2}$ feet by $5\frac{3}{4}$ feet.

The annexed plan (fig. 4) shows the progress of the excavations down to March, 1903.

Fig. 4. Plan of Caerwent, showing discoveries down to March, 1903.

ENGLISH TAU OF IVORY. 11TH CENTURY.
(BRITISH MUSEUM)

Published by the Society of Antiquaries of London, 1903.

XVII.—*On a Morse Ivory Tau Cross Head of English work of the Eleventh Century.* *By* Charles H. Read, *Esq.*, *Secretary.*

Read 12th February, 1903.

The beautiful ivory carving exhibited by the Rev. A. H. Williams (Plate XXVII.) is not only an object of great rarity, but is of exceptional interest from the fact that it is an altogether admirable example of the work of our Saxon ancestors before the Norman Conquest. Although from age and long burial much of its original glory has vanished, enough remains to excite admiration at the cunning skill of the craftsman who fashioned it.

It is carved from the tusk of a walrus, a material somewhat harder than the ivory of the elephant, and is in the form of two volutes springing from the point where it was attached to the staff of which it formed the head. The inner curve of the volute now only remains on one side, and terminates in the head of a gryphon with open beak grasping a curved end of foliage. The other side was doubtless of the same design. The body of the curve on each face is covered with conventional foliage in high relief and deeply undercut, and enveloped in its convolutions are fantastic animals, two on either side, each resting on a bracket ornamented with interlacing ornament. Near each of these monsters is a large open flower somewhat resembling a convolvulus, a peculiar feature for which I have been unable to find a parallel in any of the work of this period. The outer edge of the extreme end of each volute has a rib pierced with holes about $\frac{1}{8}$th of an inch apart, as if pearls or other jewels had been threaded along it. Above, on the shoulder of the volute, is an additional number, independent of the curve, in the form of the head and neck of a dog-like animal with open mouth and huge canine teeth, which hold some interlaced object now difficult to define. The ears of these animals are extended far backwards and ornamented with interlacing bands like the brackets before mentioned, and much resemble at first sight the wings of a cicada. On each face between the spring of the volutes is a central subject. One represents the Crucifixion, the figure of Our Lord being girded with a waist cloth reaching below the knees, and having His head with a cruciferous nimbus drooping to His right side; the feet are unfortunately missing.

The other subject shows within a vesica Our Lord triumphant over the powers of Evil. Clad in a long robe, apparently bound by a girdle, he appears to be proceeding towards his right, nimbed, and holding in his right hand a long-stemmed cross, trampling with his right foot upon a prostrate lion, and beneath his left is a winged dracontine creature like those among the foliage of the volute. In addition to the designs and ornaments described, there are plain spaces left between the curves of the volutes and the wavy line of the upper border; beneath the dogs' heads and between their ears are also similar spaces, these having holes drilled in them. It is unlikely that they were intended to be left plain, and I conjecture that they were covered with plates of gold. Some force is given to this supposition by the remains of heavy gilding that still remains

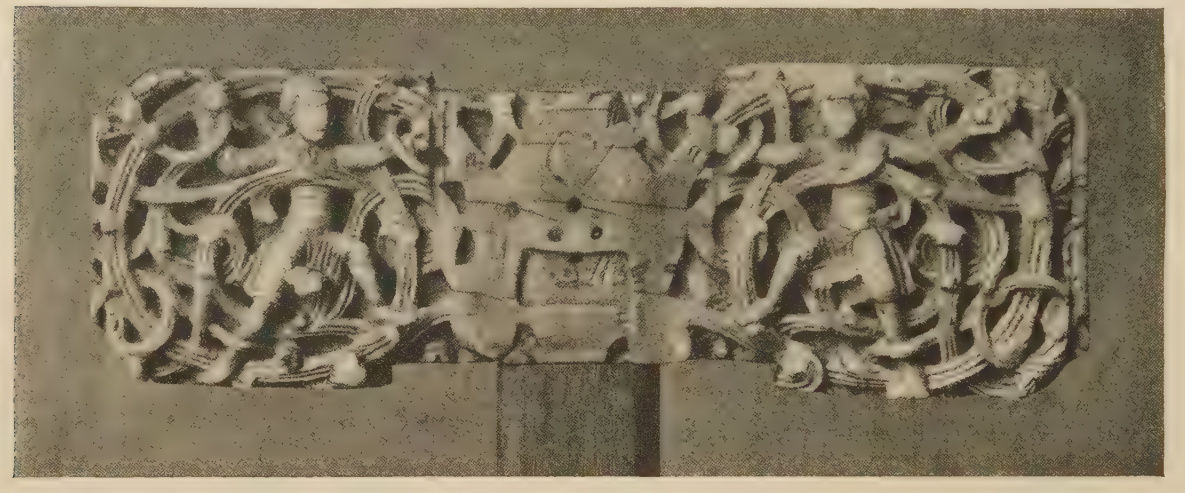


Fig 1. Tau head of elephant ivory, with human figures and monsters involved in foliage. This interesting piece is unfortunately damaged. (Maskell, *Ivories*, p. 135.) In Victoria and Albert Museum (372.71). (Full size.)

in the interstices of the carving, and it seems not improbable that the whole of the ground was gilt and that the ornament was even partly coloured. From the lines of the upper border, immediately above the principal subjects, it seems likely that a central boss or finial projected upwards, such as is seen in a similar tau head in the Basilewsky Collection in St. Petersburg,[a] and in a later "staff of the ruler of the choir," formerly in the Magniac Collection, but now, alas,

[a] Schaepkens, *Trésors de l'art ancien en Belgique*, pl. 8. This piece is there described, as well as in Westwood's *Fictile Ivories*, as being in the collection of Baron de Crassier, but it seems certain that it is either the piece now at St. Petersburg or the tau in the South Kensington Museum (fig. 5) (No. 371.71). Both seem identical in details. Compare the description in Darcel and Basilewsky, *La Collection Basilewsky*, No. 86, and Maskell's *Description of the Ivories, &c.* 134.

like so many of our former possessions of the same kind, in a foreign collection. The limited width of the tusk probably would not allow this projection to be carved from the same piece of ivory, and it was therefore fixed by rivets, of which the four holes still remain. The socket at the base is hexagonal, and the staff passed into it and up through the middle being held fast by a bronze pin, while the mount to conceal the junction was held by smaller pins, some of which still remain.

The origin of the tau cross is by no means clear. It is somewhat curious that its latest form, that of a sturdy letter T, most nearly resembles some of the earliest, though these have a long staff. It may be permissible to hazard a conjecture whether such an instrument was not in its origin a simple crutch designed

Fig. 2. Tau head of morse ivory, of Rhenish work, if authentic. Maskell was clearly more than doubtful on this point, and the difference in style between the figure of the ecclesiastic and the rest of the work is not in favour of genuineness. (Maskell, *Ivories*, p. 105.) In Victoria and Albert Museum (262.67). (Full Size.)

to support the bearer during a long office, in the same way as the oriental uses a shorter support, placed under the armpit when seated. In the Abyssinian church a tau staff is part of the paraphernalia of a priest and is intended for use as a support, as well as in the religious dances which form a part of the ceremonial of the church.[a] The actual examples that remain to us, however, which mostly belong to the eleventh and twelfth centuries, show a development and apparently a mass of symbolism that dismiss the idea of mere utility, and are strongly in favour of a ceremonial use and meaning. This is the case with the example now before us, where the elaboration of the ornament is so great as almost to preclude the use of it merely as a support, while on the other hand it favours a ceremonial or ornamental purpose.

[a] See *British Museum Guide to Early Christian and Byzantine Antiquities*, 1903, p. 96 and fig. 68.

There is fortunately no need for me to be diffuse in this place on the various instances of the tau cross, for the subject has been exhaustively treated by the learned Jesuit Arthur Martin, in *Mélanges d'Archéologie*, iv., where he gives an admirable account of the pastoral staff in its successive forms, among which he includes a number of the tau form, both from original examples and from manuscripts. But, although it is easy to discern a relation in form between the tau and the crozier, the connection is still obscure. The late William Maskell, in his time no mean authority on such a subject, discusses this point in his *Description of the Ivories in the South Kensington Museum*, p. lxxv. He says: "The tau is commonly seen and given without apparent distinction to bishops and abbots in manuscripts of the eighth and ninth centuries . . . . The extremities of the taus were often hollowed in order to receive relics . . . . . Ivory taus are of great rarity. They were gradually superseded towards the end of the twelfth century by that form which, with certain varieties of ornament, has continued down to our own time." This would seem to imply that the tau was simply an early form of the crozier.

M. de Longpérier, however, advances another theory in a memoir on the Magniac double crozier, in the *Revue Archéologique*.[a] After stating that it is, in his judgment, an episcopal crozier and not a *bâton de chantre*, he figures a denier struck by the bishops of Constance in the thirteenth century (pl. 79, 4) in confirmation of his theory. This certainly shows two staves, each with the double volute, like the Magniac specimen; and it would surely be improbable that a bishop would choose the emblem of a lesser dignitary to figure on his coinage. Where, however, I cannot follow M. de Longpérier is in thinking that the double character of the head of the staff is intended to indicate the possession of two sees by the holder. It would seem more probable that the modern single crook form was scarcely fixed, even in the thirteenth century; and the double head, in view of its symmetrical lines, is certainly, of the two, the one that should have survived, if regard be had only to its artistic qualities. Dr. F. G. Lee, in his memoir on Episcopal Staves,[b] regards the tau staff as being an earlier form of the later crozier, and gives references to those known to him, including the fine series in the South Kensington Museum. But he was more concerned with symbolism and terminology than with the origin of the form.

It would certainly appear from the numerous examples given by Martin, dating from Visigothic times onwards, that the crooked staff and the tau were carried by saints, bishops, and abbots, without distinction, and Pugin in his

[a] Vol. iv. (1847), 816.

[b] *Archaeologia*, li.

Glossary makes a statement of similar effect. The quotations given by the latter seem to show moreover that the cantor's staff had usually a pommel at the top and not a cross-bar, though one in Saint George's Chapel, Windsor, "for the precentor in the choir," had "five bands in the height and a cross-piece of ivory set in silver, with a crystal knop at the top." On the whole there seems to me every probability that we have here a pastoral staff rather than that of a precentor. The subjects with which it is adorned rather favour this supposition, being as they are symbolic of the principal beliefs of the Christian world, while the subjects on the cantor's staves, if any, are of the more ordinary devotional character, such as a figure of the Virgin, a patron saint, or the like. Further, it

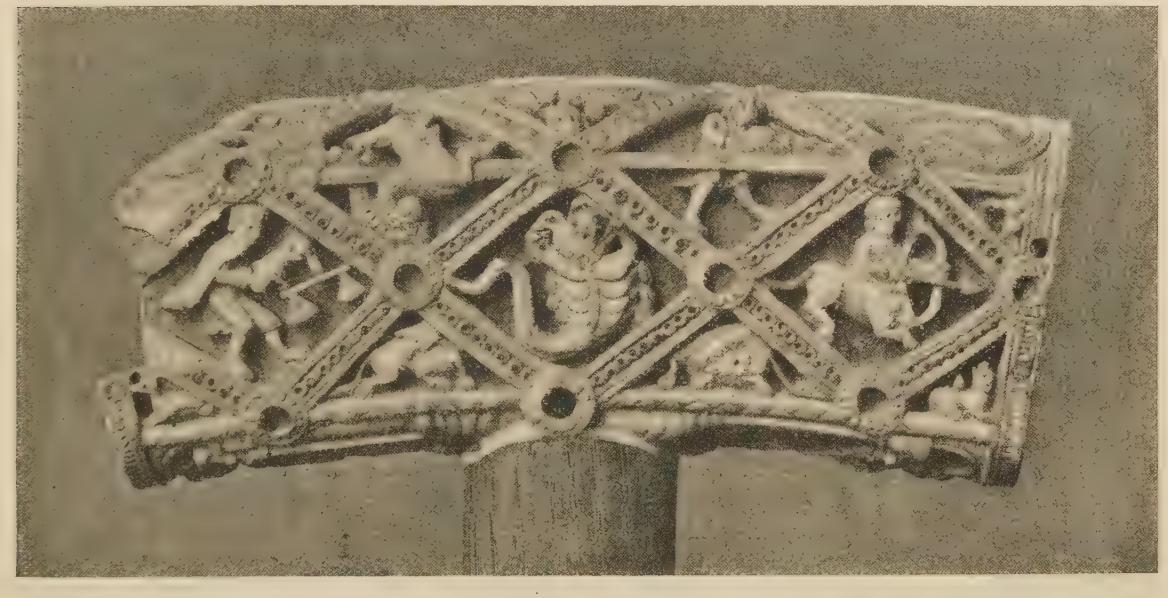


Fig. 3. Tau head of morse ivory, wanting the two ends. It is carved in high relief with the Signs of the Zodiac: beneath are two ecclesiastics, one holding a crozier, the other a tau. This piece probably dates from the end of the eleventh century. It is described in detail and figured in *Mélanges d'Archéologie*, iv. 181. (Maskell, *Ivories*, 47.) In the Victoria and Albert Museum (215.65); formerly in the Soltykoff Collection (Lot 208). (Full size.)

must not be overlooked, for what it may be worth, that all the original tau crosses still existing, and mostly as before stated of the eleventh and twelfth centuries, are invariably connected with bishops or abbots where they have any history at all.

It would be a satisfaction if one could conjecture to whom this charming piece of truly English craftsmanship originally belonged, or by whom it was made. But eloquent as it is in many ways, its imagery gives no hint on either point, and we must be content to treasure it for its inherent qualities. As to its age, for my own part I have no hesitation in assigning it to a date before the Conquest, probably in the first quarter of the eleventh century. I know that more than one experienced opinion is in favour of a period a century or more later, in deference

Fig. 4. Ivory seal of one Godwin the minister, found with a comb and whetstone at Wallingford, Berks, and described in detail in *Proceedings*, 2nd S. viii. 468, whence this figure is here reproduced in order to show the similarity of the modelling of the figures. In the British Museum.

to the Early English character of some of the foliage, and to the very naturalistic modelling of the standing figure of Our Lord. But a comparison with the Saxon manuscripts of the late tenth and early eleventh centuries for the foliage, and with the ivory seal of Godwin the minister in the British Museum (fig. 4) for the figures, I am convinced that there is good reason for adhering to my first opinion. The Harleian MS. written about 980 at Winchester, probably for Bishop Ethelwold, shows the same style of foliage, with the exception of the one naturalistic flower. The seal of Godwin is credibly assigned to the middle of the tenth century. If therefore from 950 onwards the Saxon scribes and carvers were capable of producing those two pieces of work, there can be no difficulty on the score of quality in accepting the date I assign to the ivory carving now before you. Further, its general similarity to others of approximately the same time, and the fact that the end of the twelfth century saw the introduction of the fully developed crozier, seems to point to the same conclusion on general grounds.

Note.—Since this paper was read, the Rev. A. H. Williams has been good enough to cede this interesting object to "The Friends of the British Museum," an anonymous group of benefactors who have presented it to that institution.

Fig. 5. Tau of morse ivory, resembling in design fig. 1. The note ([a]) on page 2 refers to this piece. Probably Rhenish work of the eleventh century. In Victoria and Albert Museum (371.71). (Full size.)

XVIII.—*Excavations on the site of the Roman city at Silchester, Hants, in* 1902.

By W. H. St. John Hope, *Esq.*, *M.A.*

Read 28th May, 1903.

I have the honour of laying before the Society, on behalf of my colleagues, a report of the operations carried out by the Executive Committee of the Silchester Excavation Fund during the year 1902, being the thirteenth successive season of the systematic exploration of the site.

The work, which was begun on 15th May and continued without break until 17th November, was carried on throughout under the direction of Mr. Mill Stephenson.

To suit the convenience of the tenant, Mr. Lush, the operations of 1902 were chiefly confined to a narrow and irregularly shaped field of some 4 acres in the south-east quarter of the town, adjoining and lying west and south of the parish churchyard, but we were also able to extend our excavations into the pasture on the west.

The area of the churchyard field in its northern half is a gentle slope southwards, but it then rapidly descends, and its southern end is only slightly raised above the level of a small brook which rises in the south-east corner of the pasture.

The first thing undertaken was the laying open again of the long wall running north and south, which was discovered in 1890, and enclosed the two

temples partly underlying the churchyard. This served as a limit to our work eastwards and as a base line for the purposes of our plan.

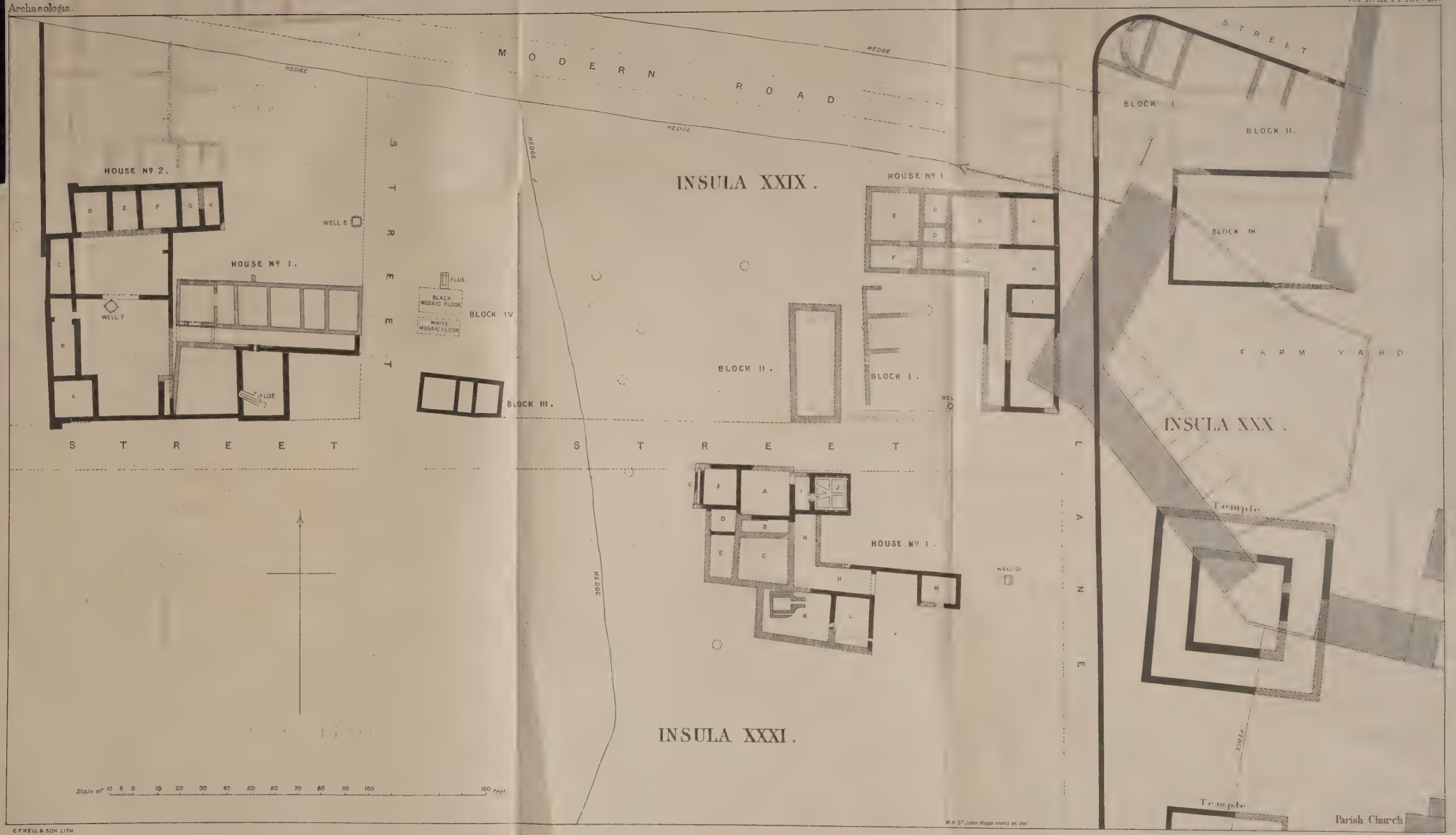
In 1890 this wall was traced southwards until it curved round to the east and passed under the churchyard, where of course it could not be followed (see plan, Plate XXXII.). It was also traced northwards as far as the farm buildings. Last year it happened that the large barn which stands athwart its line was empty, so advantage was taken of the fact to trace the wall to its northern extremity. It was followed right through the barn, and into the modern road crossing the site. It was picked up again on the opposite side, and continued into the field beyond. Here it was found to curve round to the east, as it does at its southern end, but more sharply (see plan, Plate XXVIII.). It will be seen from the town plan[a] that it points directly for the southern side of the east gate, and therefore forms the boundary of the main street that traversed the town. This street extended in a straight line from the west gate, past *Insulæ* XI., X., IX., I., XXI., and XXVII., but our discovery of last year suggests that it was then so deflected as to pass out straight through the east gate, at right angles to the section of the wall in which the gate is set.

The *insula* in which the temples stood has been numbered XXX. Beside the temples, it contained within the rounded north extremity a singular little building (Block I. Plate XXVIII.). This consisted of an oblong chamber, 21½ feet long and 12 feet wide, with an apse on its broad side towards the west. In continuation of the south end was a sleeper wall extending westwards as far as the enclosure wall. Further to the east are two other walls, also 12 feet apart, running southwards from the enclosing wall, but these apparently belonged to another building (Block II.), and had no connection with the apsidal chamber, which is complete in itself. What was the use of this building it is difficult to say, and nothing was found in or about it to give a clue.

The length of the building (Block II.) to the east of the apsidal chamber could not be ascertained, owing to the walls having been broken away on nearing the fence. The trenches were, however, continued southward, and brought to light another wall running east and west. This returned at its west end, and as will be seen from the plan formed the north side of a building or enclosure (Block III.), the south wall of which was uncovered in the farmyard in 1893.[b]

[a] Fig. 1, at end of Paper.

[b] *Archaeologia*, liv. 237.



SILCHESTER.— NORTHERN PART OF AREA EXCAVATED IN 1902.

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This enclosure was 43 feet wide, but its east end lies under the road and has not yet been found.

The two temples were fully described in our report for 1890.[a]

The buildings of which traces have been discovered in the field adjoining the church are eleven in number.

The northernmost (House No. 1) was a small house, ⌊-shaped in plan, which abutted on a street or lane 14 feet wide bounding the west side of *Insula* XXX. The northern wing stood east and west, and consisted of a number of chambers (A—E) with a corridor (G) 9 feet wide on the south. The western end of the corridor has been cut off to form another chamber (F), while its eastern end was expanded to 14 feet in width to form a hall or lobby (H), which probably contained the main entrance. The southern wing, which included this hall, extended southwards from the other along the street and consisted of two chambers (I, J). From its length, 37 feet, the larger of these was most likely subdivided by wooden partitions. The north end of the house was 81½ feet long, and its frontage to the street 90 feet, but there were some indications of a slight extension northwards. In none of the divisions of the house were any traces of the floors met with.

Immediately to the south of the west end of House No. 1 there were laid bare the traces of a building (Block I.), which may have belonged to it. It consisted of a row of at least three chambers, but the remains were too fragmentary for anything further to be made out. Through the sinking of parts of its floor into a pit we are able to say that the middle chamber had been paved with coarse red mosaic. Near the southern margin of the courtyard between these two buildings was a well (C) 18 feet deep, with a wooden tub at the bottom as a lining.

To the west of Block I. and parallel with it at a distance of about 10 feet were the gravel foundations of an oblong enclosure or building (Block II.), standing north and south, measuring internally 44 feet by 16 feet. Nothing was found in or about it to suggest its use or how it was paved.

The three buildings just described seem to have stood on the north side of a street running east and west, and extending from the wall of the temple enclosure to the chief entrance into the *forum*. The northern limit of the *insula* in which the buildings stood has not yet been fixed, but we have numbered it XXIX.

[a] *Archaeologia*, lii. 745-749.

The *insula* to the south (No. XXXI.) is also at present only partly explored, but we have uncovered at least two buildings in it.

The largest of these stood immediately south of Block II. (*Insula* XXIX.), and was a house (House No. 1) with its north front along the street, which was here 18 feet wide.

The house consisted of a northern and a southern wing, at right angles to each other. (See plan, Plate XXVIII.) The northern wing primarily consisted of two large rooms (A, C), with an intervening passage (B), and flanked on each side by a corridor. As was so often the case the west corridor has been subdivided (D, E), and its north end finally replaced by a larger room (F), with a latrine (G) on the west. The north end of the eastern corridor (H) has been similarly encroached upon by a winter room (J) and ante-room (I) extending eastwards from chamber (A).

The position of the ante-room with regard to the rest of the house suggests that the main entrance from the street opened into it, but the difficult point to understand is how it could serve even as an ante-room, when it also contained the stokehole of the hypocaust of the winter room (J) adjoining. This hypocaust was of the usual channelled variety and supported a floor of *opus signinum*, part of which remained in place. The doorway of this winter room must have been in the north-west corner, opposite another doorway from the ante-room into chamber A.

The southern wing of the house stands east and west, with the main corridor (H) returned along its north side. It only partly overlapped the other part of the house, and consisted of two large rooms (K, L), each originally furnished with a hypocaust, worked from a stokehole at the east end of the range. At some later period in the existence of the house, perhaps after the northern winter room was built, both hypocausts were completely cleared away, and the rooms put to other uses. The westernmost (K) was partly occupied by a large boiling furnace, consisting of a rectangular chamber, apparently fitted with square *pilæ* to support the vat or copper, and heated from a long brick flue or stokehole on the east (Plate XXIX.). The apparently additional flues at the sides were perhaps only the supports for a vessel of greater width than the furnace chamber. What may have been a woodshed (M) stood a little to the east of the rooms just noticed, at the end of a continuation of the north wall of the corridor. A little further east was a wood-lined well (D), 17 feet deep.

Some little distance to the south of the house just described were the scanty

SILCHESTER.—FURNACE IN HOUSE No. 1. INSULA XXXI.

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SILCHESTER.—WALL WITH SOCKET FOR BEAM IN HOUSE No. 1. INSULA XXXII.

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traces of another (? House No. 2). These traces include the remains of a winter room warmed by a pillared hypocaust, and part of a range of chambers to the east with a return southwards. Close to the north-east corner of these remains was a wood-lined well (B), 18 feet deep. There are some reasons for assuming that immediately to the south of the building just described there lay another street, running east and west past the southern border of *Insula* XXX. No positive traces of it beyond a bed of gravel were found, but the arrangement of the building next to be described is very suggestive of it.

This building, which may be called House No. 1 of *Insula* XXXII., consisted of a fairly symmetrical block, standing north and south (see plan, Plate XXXII.); but the north end, that towards the street, forms a slight angle with the rest of the house, and has apparently been rebuilt. It seems, then, that we have here another instance of a house that was erected before the town was finally laid out, and had to be altered to suit the new lines of roadway. Owing to the position of this house on the edge of a slope its northern end was built into the hill, and was found standing to a height of about $3\frac{1}{2}$ feet. For the same reason it was built of greater thickness than usual. The house consisted of a central range of chambers (A, B) between a narrow corridor (C) on the east and a wider one (D, E), which was subdivided, on the west. The subdividing walls are so few that the other divisions must have been wooden partitions. That wood was actually used in the construction of the building, probably in all of it from a few feet above ground, is shown in an interesting way by the socket or bed of a longitudinal beam in the north wall of the western division of the house. (Plate XXX.) The room (D) of which this wall forms the north end presented other features of interest. Built into its east side was a block of brickwork with the remains of a hearth against it, as if for an internal fireplace. Imbedded in the ground at the south end of the room were four earthenware pots, one of which was covered with an octagonal tile, and another with a thin piece of stone. Pots similarly placed have been found in other houses at Silchester, but their object is still a matter of dispute. To the south of the room under notice a quantity of loose red *tesseræ* was found, and these are the only indications as to how any part of the house was paved. Mr. Lyell has called my attention to the large amount of charcoal overlying the interior of this house at the floor level. Seeing that so much of the construction was wood, it is possible that the building was destroyed by fire.

A short distance to the east of this house were laid open the remains of another (House No. 2) of about the same size, and not unlike it in plan.

It consisted of a central row of chambers (A, B) with a narrow corridor (C) on the west, and a wider one (D) on the east, with a transverse row of two chambers (E, F) on the south. The corridor (C) was apparently little else than a wooden pentice, but there is of course nothing to show how far it was closed against the weather. At its north end are the remains of a return passage (G) running westwards. The central row of chambers was probably further subdivided than by the cross wall found by timber partitions. Of the eastern adjunct (D) nothing could be traced except a patch of coarse red tessellation at its southern end. The room (E) south of it presented nothing remarkable, but the large winter room (F) that completed this end of the house exhibited several features of interest. First its size should be noticed, it being 27 feet long and 20 feet wide. The hypocaust that warmed it was of the composite class, with an oblong chamber in the middle filled with octagonal *pilæ*, and radiating flues to the corners and side walls. (Plate XXXI.) The *pilæ* were twenty-four in number, in four rows of six each, and unusually close together. The fact of their being built up of octagonal tiles is noteworthy, for though tiles of this shape have repeatedly turned up singly, they have only rarely been found at Silchester forming *pilæ*. The hypocaust was worked by a stokehole on its north side, in the southernmost of the main row of chambers. From the remains of older foundations which traverse the hypocaust, it is evident that the southern part of the house consisted originally of three chambers of nearly equal dimensions, but the two westernmost were eventually thrown into one and converted into a winter room warmed by the hypocaust. Between the two houses just described and about equi-distance from both, there was uncovered a somewhat irregular patch of coarse red tessellation (Block I.). Closer examination showed that it had apparently formed the floor of a wooden building about 11 feet square, subdivided by a partition 8 inches thick. It is rather too far from House No. 2 to have ever formed part of it, though the close coincidence of its main lines of direction with those of the house suggest that it was connected with it in some way, despite the absence of any traces of such connection.

Immediately to the east of House No. 2 are the foundations of two buildings, the like of which have not occurred before at Silchester. That to the north (Block II.) was a long and narrow structure, measuring internally 58 feet by 6 feet, and built across the slope of the hill so as to maintain a fairly level floor. The west side and the two ends were only 15 inches thick and for the most part built of tiles, but the east side formed an open arcade or portico of six bays. Of the

SILCHESTER.—HYPOCAUST IN HOUSE No. 2. INSULA XXXII.

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character of this portico we have no evidence, inasmuch as only the bases of the supports remained, and these were merely oblong masses of tile; we are also equally in the dark as to the use to which the building was put. Nothing of its floor remained and nothing was found in or about it.

The other building (Block III.) was of totally different plan and character. It consisted of a semicircular wall of flint rubble, with an internal diameter of 15 feet, with a short return on either side along the diameter, as if the open side, which faced up the slope towards the north-east, were partly closed by an arch so as to form a kind of alcove.

From the fact that both buildings face uphill and turn their backs upon House No. 2, it looks as if they stood in the grounds of House No. 3, which was excavated in 1896,[a] and now underlies the recent extension of the parish churchyard.

A wood-lined well (A) 17 feet deep to the west of Block III. probably belonged to House No. 2.

South of the buildings described our trenches did not reveal any further foundations, and owing to the lowness of this part of the site it was probably open or garden ground.

The little stream which served as the western boundary of our season's work now passes out of the town through a breach in the wall. As, however, there could have been no such breach here originally, the sides of it were examined in the hope of bringing to light the remains of an archway or some such proper outlet. But the result was only partly successful, for although we found on the east side remains of the vertical jamb of an opening, on the west it had been destroyed, and what was left on the east did not extend high enough to show traces of an arch. We were able, however, to determine that this section of the wall, like that to the west, which also traverses low marshy ground, was built upon piles, and at the base of the opening through the wall there was laid across it a stout baulk of oak about 9 inches square, perhaps part of a sluice gate.

About 100 feet to the east of the breach through which the brook flows out, the line of the town wall, which here bounds the site, makes a small angle. As these angles are usually marked by one of the inner buttress-like projections which we think formed the bases of towers set at intervals astride the wall, search was made for one at this point. The result was satisfactory, inasmuch as

[a] *Archaeologia*, lv. 428, 429.

added materially to our knowledge. The six complete houses uncovered are all of interest on account of their small size, and of the other five buildings two at any rate are of a new type. It is unfortunate that the topographical limits to the excavations compelled us to deal with parts only of *insulæ*, but we hope to be able to complete some of them during the forthcoming season.

The circumscribed area of last year's operations had a further unfortunate result, that the comparatively small amount of open ground between the buildings contained but few pits or wells. The miscellaneous antiquities found are consequently so few in number that the Committee has not thought it worth while this year to have an exhibition of them.

But few traces were met with of mosaic pavements, and those even of the coarsest description only. The few pieces of painted wall-plaster also do not call for remark.

Used up as building material in the large hypocaust of House No. 2 in *Insula* XXXII. was a fragment of an inscription. It was cut on a slab of sandstone at least 6 inches thick, and the letters were 5 inches high and of good early character. An A in one line and in the next the letters M F are all that remain, and these are imperfect. The complete inscription may originally have formed part of one of the adjacent temples. If so, it would point to the destruction or rebuilding of the temple before the erection of the house in question.

Close to House No. 1, *Insula* XXXII., was found a fragment of an Attic base of good character, with part of an attached shaft, which must have been about $8\frac{1}{2}$ inches in diameter. Possibly this, too, came from one or other of the temples. The same remark applies to some portions of Purbeck marble mouldings and wall linings.

Of the other objects discovered the most noteworthy is the half of an upper quernstone of Andernach lava. Its diameter was 28 inches, and there still remain in the upper surface the iron staples of the handles by which it was worked.

The bronze objects include two good brooches, a toy axe, a bell, a curious torque of debased silver, and a number of needles and pins. Another pin is of silver, as is also a plain ring with traces of gilding.

Among other metallic objects are a rod of solder, a three-legged candlestick of iron, and a few keys, etc. of the same metal.

C.F.KELL & SON, LITH.

W.H.St.John Hope mens et del

SILCHESTER.— SOUTHERN PART OF AREA EXCAVATED IN 1902.

The objects in bone consist almost entirely of the usual assortment of pins and needles and small flat counters.

Of shale there are parts of two large trenchers and some fragments of bracelets.

The fragments of glass do not call for remark.

The amount of pottery found was insignificant when compared with the large number of vessels recovered in other years. A mutilated figure of Venus, modelled in pipeclay, was found in Pit V. at a depth of 4 feet.

Among the very few extraneous objects are a polished stone axe of the Neolithic period and an iron rowel spur of the time of the Civil War.

Coins were fairly numerous.

Of the wells, that marked A, in *Insula* XXXII., close to Block III., was 17 feet deep, and was lined for 11 feet from the bottom with oak boarding, forming a framework 3 feet square. The boards, of which there were seven rows, varied in width from 13 to 20 inches. Among other things found in this well was a fine specimen of a horse's skull, at a depth of 12 feet, skulls of sheep and oxen, a vessel of red-glazed ware, and a black pot.

Well B, in *Insula* XXXI., north of House No. 2, also had a wooden lining 2 feet 6 inches square, extending for $8\frac{1}{2}$ feet up. The boards of this were about a foot broad, and have been pronounced by Mr. Clement Reid to be of alder. A small wooden bucket, with iron handle and two bands of the same material, was found at the bottom, and also the handle of another bucket.

Well C, in *Insula* XXIX., close to the street, was lined with a wooden barrel 3 feet in diameter, formed of 19 staves, but it was in a very decayed condition.

Well D, in *Insula* XXXI., near House No. 1, was 17 feet deep, with a timber framing 3 feet square for 10 feet up. The boards were of oak. Among the finds were a jug of pottery, and a copper coin of Caraucius (?) which was wedged in between two of the boards of the lining.

Well E, in the pasture, was only 8 feet deep, and lined to half-way up with a wooden framing 3 feet square. It contained much broken pottery.

Well F, also in the pasture, in the courtyard of House No. 2, was 10 feet deep, with a wood lining $2\frac{1}{2}$ feet square.

The numerous bones found in the wells and pits have been examined by Mr. E. T. Newton, who has kindly submitted the following note upon them:

"Many mammalian and other bones have been found during the Silchester

explorations of 1902. The greater number of these remains belong to Oxen, and most of them, including a portion of a skull and several lower jaws, together with limb-bones, are parts of animals of moderate size, which cannot be distinguished from some of our modern cattle (*Bos taurus*). There are, however, a few bones, including a frontal with horn-cores attached, which are referable to the long-faced Ox (*Bos taurus*, var. *longifrons*).

The Horse (*Equus caballus*) is represented by a skull and lower jaw ramus, evidently belonging to a fair-sized horse; certain limb-bones, however, are parts of a much smaller animal.

The Sheep (*Ovis aries*).—A nearly complete skull and half another, together with a lower jaw ramus, agree with similar parts of modern sheep; some limb-bones may likewise belong to sheep, but may possibly be parts of a goat.

The Goat (*Capra hircus*).—Some horn-cores and a piece of a young jaw with milk-teeth clearly belong to this species, and certain of the small ruminant limb-bones may be referable to this species.

The Red-deer (*Cervus elaphus*).—A few pieces of antlers represent this animal; one of these retaining the "burr" is part of a shed antler; other pieces are interesting on account of their having been sawn across.

The Roe-buck (*Capreolus capræa*).—A well-preserved metatarsal bone is the only part of this animal yet found.

The Pig (*Sus scrofa*).—A piece of a lower jaw and two fibulæ are referable to this species; as well as a large tusk apparently belonging to a Wild Boar.

The Dog (*Canis familiaris*).—Two or three skulls and a number of limb-bones indicate the presence of at least three different kinds of dogs, ranging in size from a terrier to a stag-hound. One ulna found in the floor of a house is much bent, and must have belonged to a bow-legged animal, suggesting the form of some bull-dogs or perhaps an otter-dog.

The smaller mammals are represented by a few bones of the Field-mouse (*Mus sylvaticus*), the Field-vole (*Microtus agrestis*), the Bank-vole (*Evotomys glareolus*) and the Shrew (*Sorex vulgaris*).

Very few birds' bones have been found this year; there are some, however, belonging to a small fowl, about the size of a game bird, and the strong spur upon one metatarsal bone seems to favour this idea. Bones of a Wild-goose (*Anser*

cinerius?) and a few of those of a Woodcock (*Scolopax rusticula*) are also among the scanty avian remains obtained during the 1902 explorations.

The only Fish that we were able to record for 1901 was the Eel; but this year we have evidence of three other fishes as well as the Eel.

The freshwater Stickleback (*Gasterosteus aculeatus*) is represented by two of the characteristic ventral spines and one of the ornamented pelvic bones. The recovery of these minute specimens bears testimony to the care with which Mr. Lyell has searched for the smaller organisms. The other two fishes are marine forms, a Sea Bream, several scales of which have been found at a depth of about eight feet from the Roman surface, and a Herring (probably *Clupea harengus*), a small but characteristic bone of the skull having been preserved.

The presence of these remains of marine fishes so far from the sea coast opens up some interesting questions. May it be taken for granted that they had been used as food? The possibility of their having been brought by birds at once occurs to our minds. But the Sea Bream scales were found in "Well C," and this seems to indicate that they were domestic refuse, and most likely therefore had been used as human food. The fragment of Herring also was found, with a few remains of Eels, Mice, and Birds, in a small and irregular hole under the foundation of a house in the grass field, and may therefore have been part of a refuse heap subsequently built over."

The search for remains of plants, etc. in the filling in of the wells and pits has again been followed up with exemplary care and patience by Mr. A. H. Lyell, and the results have been examined by Mr. Clement Reid, F.R.S., who has most kindly furnished us with the following report:

"The material collected during 1902 by Mr. A. H. Lyell from the rubbish pits and old wells has proved of more botanical interest than that obtained in 1901. It has yielded seeds of various plants for which the mediæval herbals were till now the earliest records. Most of these additions to the flora of Roman Britain are well-known weeds of cultivation, which may have been introduced in Roman times, or may date back to the first introduction of cereals and vegetables during the Bronze and Neolithic periods. At present scarcely any material undoubtedly belonging to these two periods has been examined for plants, and the species known are very few; but ultimately

we shall be able to fix the date of the introduction of our various cultivated plants and weeds of cultivation, and then we can use seeds, as we do coins or pottery, for fixing the date of ruins or camps of unknown age. Before this can be done it is necessary, however, that we should obtain a good knowledge of the flora of each successive period, from material collected and dated in the same careful way that the Roman material is now being gathered up and preserved by the Silchester Committee.

The additions to the flora of Roman Silchester obtained last season are twenty-four in number, besides seeds of several plants not yet determined:

Ranunculus acris, *L.* (Meadow Buttercup).
Ranunculus auricomus, *L.* (Goldielocks).
Apium nodiflorum, *Reichb.*
Daucus Carota, *L.* (Carrot).
Caucalis Anthriscus, *Huds.*
Galium verum, *L.*
Galium palustre, *L.*
Galium Aparine, *L.*
(Bedstraws).
Cnicus arvensis, *Hoffm.* (Thistle).
Serratula tinctoria, *L.* (Saw-wort).
Centaurea nigra, *L.* (Knapweed).
Lapsana communis, *L.* (Nipplewort).
Taraxacum officinale, *Web.* (Dandelion).
Sonchus arvensis, *L.* (Corn Sowthistle).
Lithospermum arvense, *L.* (Gromwell).
Solanum nigrum, *L.* (Black Nightshade).
Calamintha arvensis, *Lam.* (Calamint).
Ajuga reptans, *L.* (Bugle).
Chenopodium hybridum, *L.*
Chenopodium album, *L.*
(Goosefoot).
Polygonum lapathifolium, *L.*
Rumex viridis, *Sibth.* (Dock).
Buxus sempervirens, *L.* (Box).
Carex dioica, *L.* (Sedge).

One of these plants is of considerable interest, for it throws light on a question that has much exercised the botanist. The box tree is of such partial occurrence in Britain, being only found wild in a few localities in the south, that it has always been a matter of doubt whether the tree could be considered native. If not native, at what date was it introduced? Box-clippings have now been found in Pit XIII. (1902), and this shows that the tree certainly grew in Britain as far back as Roman times. But whether the box was indigenous or cultivated at Silchester there is nothing definite to show, for it occurs as clippings only. The fashion of clipping the box into fantastic shapes was well known in Roman times, such trees being among the adornments of Pliny's villa at Tusculum. At Silchester, however, the box clippings are associated with various weeds and the untidy elder, not with either garden plants or shade trees. This perhaps suggests that the clippings belonged to withered garlands made from wild trees, and were not gardener's waste.

The discovery of seeds of fig and grape in several fresh pits makes it increasingly probable that they were cultivated in Britain, and were not the mere remains of imported dried fruits. Neither the fig nor the vine is difficult to cultivate in the south of England, and the non-occurrence of other dry fruits, such as the almond, which do not ripen in Britain, suggests that only home-grown fruits were obtainable. If the wood of the fig and vine should turn up, it will settle the question, for neither of these woods is of any value, and they would not be imported. The occurrence of masses of grape seeds and skins, such as would form the refuse of a wine-press, would be conclusive; but at present the seeds occur sparingly, suggesting grapes or raisins for eating, not for wine. The question is a difficult one, for on the one hand we find imported wine-casks made of silver-fir and strongly suggesting a trade with Bordeaux; on the other we find seeds of grape, suggesting that the vine was grown in Britain.

In a former report I pointed to the extraordinary abundance of seeds of poisonous plants in the old wells in Silchester as a suspicious circumstance. It now appears to be perfectly explicable without casting any slur on the inhabitants. Berries of *Atropa Belladonna* were freely used as a cosmetic; hence the constant occurrence of seeds of the deadly nightshade in the house-refuse. In all probability this exceedingly dangerous plant was not allowed to grow in the town, or within reach of children or cattle; but was brought from a distance. The woody nightshade and black nightshade are both plants of common occurrence in gravelly wastes and among old buildings; their occurrence, associated with the elder, overhanging dilapidated wells, is not surprising. The other poisonous plant, the hemlock, grows and seeds so freely among the tall sedges used for thatching, that it would be surprising if a good many seeds of it were not entangled in the thatch.

A comparison of the cultivated plants with those grown in Italy raises various questions which at present we cannot answer. The pear, the peach, the apricot, and the chestnut are all missing, and the plums do not belong to the numerous good varieties known to the Romans. The grape and fig are the only fruits which they seem to have introduced into Britain. It is curious to find in a collection of seeds from the Roman layer in Tooley Street, recently sent to me by Mr. Kennard, exactly the same association. There also the fig and grape occur with no better fruit than the damson, and are associated with the same weeds of cultivation. In each locality there is the same singular absence of some of our commonest weeds, such as the groundsel, the daisy, and the white dead-nettle. It would now be

interesting to examine the plants from a wealthy and fashionable town like Roman Bath, for there if anywhere we might expect to find the fruit eaten by the rich."

With these interesting remarks of Mr. Clement Reid our report may fitly conclude.

The accompanying block-plan (fig. 1) shows the progress made in the excavation of the site.

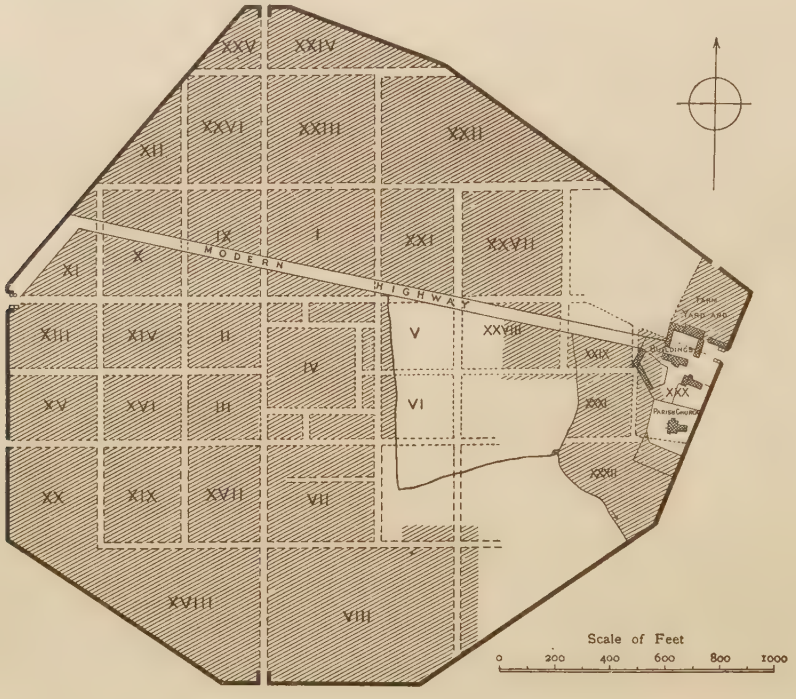


Fig. 1. Block-plan of Silchester, showing portions excavated down to the end of 1902.

1.

2.

3.

4.

CARVED IVORY PYX IN THE BRITISH MUSEUM.

Published by the Society of Antiquaries of London, 1903.

XIX.—*On a Carved Ivory Pyx in the British Museum.* *By* O. M. Dalton, *Esq.*, *M.A., F.S.A.*

Read 7th May, 1903.

The pyx illustrated in Plate XXXIII., and acquired by the British Museum in the present year, was formerly in the possession of the Reverend Walter Sneyd, of Keele Hall, where it had been preserved for about half a century. It was exhibited at the Art Treasures Exhibition at Manchester[a] in 1857 and again at South Kensington in 1862, has been figured, though imperfectly, by Garrucci[b] and Rohault de Fleury,[c] and cast for the series issued by the Arundel Society.

The subject represented is the Healing of the Demoniac (Matthew viii. 28, Mark v. 2, Luke viii. 27). In Plate XXXIII., figs. 1 and 2, Our Lord is seen followed by two disciples and confronted by the Demoniac, who, nude to the waist, has issued from a building with folding doors and high-pitched roof representing the tomb. Our Lord is beardless, with long hair, and both he and the disciples wear the tunic and pallium, though the garments are rendered in a manner suggesting that the artist did not quite understand the way in which they were worn. (See below.) Our Lord carries a long cross, and the disciple behind him a book. In fig. 3, representing the opposite side, are seen three figures similarly dressed, two beardless, one with moustache and beard; and in fig. 4 beneath the bronze plate of the fastening hangs a curtain, the crack down the centre having been

[a] J. B. Waring, *Art Treasures of the United Kingdom* (1858), 8.

[b] *Storia dell 'Arte Cristiana*, vol. vi. plate 439, fig. 4. Garrucci erroneously describes the pyx as belonging to the cathedral church of Sens.

[c] *La Messe*, vol. v. plate 372, and p. 67b.

repaired by a piece of wire. The letter B on the left has been rudely cut in the space to the left of the lock in modern times. The pyx has a flat ivory bottom secured by four copper or bronze clamps identical in style with those found upon other objects of the kind, for instance on an example in the Basilewsky collection at St. Petersburg;[a] but it is possible that neither the bottom nor the clamps were originally made for this particular pyx, as there is a kind of sunk border or rebate running round the greater part of the circumference (see Plate XXXIII., figs. 1 and 3), which looks as if the lower edge had been fitted into a base with a raised rim. This peculiarity appears to be shared by the Basilewsky example to which reference has just been made. The lid and hinges are lost.

Fig. 1. Figure of Moses from the Alcuin Bible in the British Museum.

The Sneyd pyx belongs to the class of Christian antiquities which have derived both their name and form from the Roman box (*pyxis*), originally made of boxwood, but afterwards of other materials, especially ivory. The Roman ivory pyxis[b] was formed from a transverse section of an elephant's tusk, and had two principal uses; when fitted with a lid it served as a receptacle for jewels and other small objects of value, when without a lid as an *acerra* or box for the grains of incense thrown into the flames of the pagan altar. The Christian Church adopted the pyxis in both its forms, using the covered variety as a pyx, or sometimes as a reliquary, and the open form, though far less commonly, to contain the incense for the thurible. A certain number of these ivory boxes, ornamented with secular subjects, have come down to modern times, having generally owed their preservation to their inclusion in church treasuries; but the greater number are carved with distinctively Christian designs and were made for Christian use. These date from the period between the fourth and the seventh centuries, and were largely produced in Egypt, Syria, and Asia Minor, those parts of the Christian East to which so much of the best ivory work of the sixth century is ascribed.[c]

[a] A. Darcel, *La Collection Basilewsky*, plate ii.

[b] H. Graeven, in *Monuments et Mémoires publiés par l'Académie des Inscriptions et Belles-Lettres (Fondation Eugène Piot)*, vol. vi. (1900). "*Pyxide en os représentant la naissance d'Apollon et de Diane.*"

[c] A number of the pyxes still in existence are figured by Rohault de Fleury and Garrucci in the volumes cited above.

A glance at the Sneyd pyxis will suffice to convince the observer that although the general treatment of the subject is in accordance with early Christian ideas, the style of the drapery, the character of the figures, and certain details of costume and architecture are not those of the sixth or any earlier century. Critics have consequently experienced a difficulty in finding a satisfactory attribution. One decides in favour of Rome towards the middle of the eighth century;[a] another, with less precision, suggests Italy as the place of origin, and the period between the sixth and eighth century as the date;[b] others think of the East; others again, perplexed by so much incongruity, take refuge in the easy verdict of forgery. I venture to think that all these opinions are equally erroneous; that, as Mr. Scharf hints in his short description,[c] the pyx was made north of the Alps in the ninth or tenth century, and that it is one of those imitations of early Christian work comparatively frequent at that time, of which the Lorsch bookcover at South Kensington and the other remarkable bookcover in the Bodleian Library are notable examples in English collections.[d]

A nearer examination of the groups upon the sides of the pyx will reveal many points of resemblance with Carlovingian and early German manuscripts and ivory carvings. The squat figures with their large heads and prominent eyes have a certain family likeness to those of the so-called Alcuin Bible in the British Museum, written at Tours about the middle of the ninth century (fig. 1). Nor is the resemblance confined to a general similarity of type. If we examine the treatment of the extremities we shall find the broad feet with the line of equal toes and the long curiously retorted fingers, so familiar to students of Carlovingian manuscripts. Such fingers are especially characteristic, and have been remarked by more than one writer[e] on the art of the period. The apostles on the pyx,

[a] G. Stuhlfauth, *Die altchristliche Elfenbeinplastik*, 66. Stuhlfauth compares with the Sneyd pyx four panels in a collection in Paris, Garrucci, plate 448, 10-13. He states that the pyx originally came from Aachen.

[b] Westwood, *Fictile Ivories*, 274.

[c] In Waring's *Art Treasures*, cited above.

[d] For the Lorsch bookcover (Maskell, *Ivory Carvings*, plate opposite page 53) see H. Graeven in *Byzantinische Zeitschrift*, x. 1-22. The Bodleian bookcover (Westwood, *Fictile Ivories*, plate vi.) is especially interesting because the early Christian original of one of the plaques composing it is still in existence; see A. Haseloff in *Jahrbuch der königlich preussischen Kunstsammlungen*, 1903, pp. 47ff. The imitation of early Christian pyxes in the West is not so frequent as that of panels or plaques; but there is an example at Reichenau executed at an even later date than that suggested for the Sneyd pyx. For this information I am indebted to Dr. Hans Graeven, Director of the Trier Museum.

[e] J. R. Rahn, *Das Psalterium Aureum von Sanct Gallen*, 36, "*auswärts geschweifte Finger.*"

though poorer in execution, are closely related in style to the St. John of a Rhenish ivory at Berlin (fig. 2). The treatment of the drapery, with its excessive multi-

Fig. 2. Figure of St. John from a plaque representing the Crucifixion in the Royal Museum at Berlin: attributed to the Middle Rhine, tenth-eleventh century.

After the reproduction on plate xii. of the *Beschreibung der Bildwerke der Christlichen Epoche: Die Elfenbeinbildwerke; Königliche Museen zu Berlin*, 1902.

plication of folds suggestive of a school more familiar with caligraphic than plastic art, is equally prominent in the miniatures and ivories produced under the successors of Charles the Great. The execution in the present case is neither so painstaking nor so correct as in the Lorsch bookcover, or in the panel in the British Museum here reproduced for comparison (fig. 2); but it manifests the same defects, the same meaningless complication of folds, the same occasional tendency to represent garments in unnecessary agitation as if stirred by a violent wind, peculiarities far more

Fig. 3. Ivory panel, ninth-tenth century, in the British Museum.

characteristic of the work done in northern Europe during the ninth and tenth centuries than of anything produced in Italy or in the Byzantine Empire at an earlier time. Again, the architecture of the tomb from which the Demoniac has issued, conforms in all its details to that found in contemporary manuscripts. The capitals of the columns resemble those of the architectural borders of the Eusebian canons, introduced into the west from Syria, as well as those seen in contemporary Byzantine work.[a] The bolts on the doors are closely paralleled in miniatures of the Bible of St. Paul, photographed by Westwood, and in the Bible presented by Count Vivian to Charles the Bald.[b] Further, the curtain which hangs beneath the lock (Plate XXXIII., fig. 4), is analogous to those suspended

Fig. 4. Figures from a tenth-century Psalter in the Royal Library at Stuttgart.

behind the throne described in the Apocalypse, or behind King's thrones in Carlovingian manuscripts; examples of this are found in the "Alcuin Bible," to which reference has already been made, as well as in Count Vivian's Bible, and the Lothair Gospels.[c] And finally the curious misplacement of the ornamental stripes upon the garments (Plate XXXIII., fig. 1), which has supplied one of the principal arguments to those who doubt the authenticity of the pyx, can also be illustrated from Western MSS. of about the same date. Fig. 4, *a b* and *c*, are

[a] See for example the Eusebian Canons in the *Codex aureus*, Harley MS. 2788 in the British Museum; and a Byzantine ivory plaque of the tenth and eleventh century at Berlin, *Elfenbeinbildwerke*, Album, plate iv. No. 9A.

[b] Westwood, *The Bible of the Monastery of St. Paul near Rome*, photographs 3,108 and 3,112, and *Palaeographia sacra pictoria;* plate reproduced from the Bible of Charles the Bald.

[c] Comte A. de Bastard, *Peintures et ornements des MSS. . . . pour servir à l'histoire des arts et du dessin depuis le* 4me *siècle jusqu' à la fin du* 16me, *livraison* iii.

derived from a Psalter of the tenth century[a] in the Royal Library at Stuttgart, and illustrate particular verses of the Psalms. They show that the vertical *clavi* of late Roman times were inserted by early German artists with little regard for their original and proper position. In fig. 4, *c*, the lower end of one of the *clavi* which run in vertical pairs down the front of the late Roman tunic, is placed horizontally on the mantle (chlamys) in the position of right belonging to the rectangular patch known as the *tablion*; while in fig. 4, *a*, the ends of two similar *clavi* hang across the knee of the harpist, conveniently filling an otherwise undecorated space. If with these misplaced ornaments are compared those upon the garments of Our Lord and his disciple (Plate XXXIII., fig. 1), the similarity will at once be apparent. Thus the incorrect application of these details of ancient costume, so far from indicating the work of a modern counterfeiter, is in fact a striking confirmation of the early mediaeval origin of the pyx.

There remain one or two iconographical points on which a few words may be said. The bearded figure with the long moustache and hair parted down the centre (Plate XXXIII., fig. 3) has at first sight a general appearance somewhat suggestive of a later period; but here again Rhenish ivories of the tenth century furnish sufficiently near parallels.[b] A more serious objection would be raised if it were certain that this bearded figure were intended for Christ; for then we should have on the same object two figures of Our Lord, one with and the other without the beard, an anomaly which, though not unparalleled in Early Christian art,[c] would surely be superfluous in the present instance. The principal reason for identifying this figure with Our Lord is doubtless due to the Greek gesture of benediction which he makes with his right hand. But I think this fact hardly in itself suffices to prove the case, and that the gesture, like those made by the other disciples, simply indicates that the person who makes it is engaged in conversation. The fingers of the central personage form the Latin gesture of benediction, and of the three this figure has the greatest resemblance to that of Our Lord on the other side of the pyx. If Christ is represented by any of them, which I am inclined to doubt, it would surely be by that the figure in the centre; the lateral figures, like that immediately behind Christ in the principal scene, carry books, suggesting that they are evangelists, and form the remainder of Our

[a] J. H. von Hefner-Alteneck, *Trachten Kunstwerke und Geräthschaften vom frühen Mittelalter bis Ende des* 18tn *Jahrhundert*, vol. i. (Frankfurt, 1879), plates xxii. and xxvi.

[b] *Elfenbeinbildwerke*, Berlin, 1902, No. 38, plate 12.

[c] J. Strzygowski, *Byzantinische Denkmäler*, i. 33.

Lord's following at the time of the miracle.[a] The youthful appearance of Our Lord need excite no surprise, for the beardless type, which was of course very common in Early Christian times, continued to be the rule through the greater part of the Carlovingian period, and was not entirely superseded until the rise of Gothic art. The absence of the nimbus is more remarkable, and is a rare omission for an artist of the ninth or tenth century to have made. But the earlier pyxes of the Christian East frequently leave it out; and if, as we suppose, the carver of the Sneyd pyx was acquainted with such older ivories, the peculiarity becomes at least intelligible.

The healing of the Demoniac is a subject not found in the Early Christian art of the West,[b] but occurs several times in works originating in the Christian East, especially in Syria. The most conspicuous examples are the large carved ivory bookcovers in five parts, now preserved in Paris, Ravenna, and Etchmiadzin in Armenia, all of which are connected with the Syro-Egyptian artistic province, and date from the sixth and seventh centuries. One other pyxis in the Basilewsky Collection at St. Petersburg is carved with the same scene, and this is also attributed to Syria and to the same period. The subject further occurs in a miniature of the Syrian gospel of Rabula (A.D. 586), upon a gold encolpion from Adana, and in the mosaics of San Apollinare at Ravenna, a city in which Syrian artistic influence was very strong in the sixth century. It survived throughout Byzantine times and is found at Mount Athos. But everything points to Syria as the country in which it first became popular.

There is no great difficulty in supposing that the model from which the carver of the Sneyd ivory worked may have been a Syrian pyxis of the sixth or early seventh century.[c] At this period the artistic and commercial activity of Syria was equally remarkable, and the settlements of Syrian merchants, which had long been established in every part of the empire, were so many agencies for distributing the products of their country. Works of art of all kinds accompanied the silk and spices of the East from the ports of the Eastern Mediterranean to the West, and that ivory carvings were to be found among these there can be little doubt. For

[a] Garrucci, *Storia dell 'arte Cristiana*, vol. vi., interprets these three figures as three apostles.

[b] J. Strzygowski, *as above*, p. 37.

[c] On Syrian influence in the West, see P. Scheffer-Boichorst in *Mittheilungen des Instituts für Oesterreichische Geschichtsforschung*, (1884), v. 521 ff, "*Die Syrer im Abendlande*"; H. Janitschek, in *Festgruss an Anton Springer* (Berlin and Stuttgart, 1885), *Zwei Studien zur Geschichte der Carolingischen Malerei*; F. Leitschuh, *Der Bilderkreis der Carolingischen Malerei* (Bamberg, 1889), 7, etc.

there still exist in European collections ivories made in the West, the descent of which from Eastern Christian originals is not open to question, and the same relationship is apparent in the case of Carlovingian manuscripts; it has already been mentioned that the ornamentation of the tables of Concordance known as the Eusebian Canons, which form so striking a feature in Carlovingian Gospels, was introduced from Syria. It is therefore quite in the order of things that the nation whose representatives lived and died at Trèves in the fourth century, formed a colony at Orleans, provided Paris with a bishop in the year 591, and helped both Gregory of Tours and Charlemagne in their translations from the Greek, should have furnished the ivory carvers of the West with many of their models. It would have been astonishing if craftsmen so eager in imitation as those of Charlemagne and his successors had taken no advantage of the opportunities derived from so prolific and accessible a source.

The general impression produced by the pyx is that of a piece of work influenced both by earlier ivory carvings and by contemporary miniatures, deriving from the first its form and the traditional method of arrangement, from the second its over-elaborate treatment of drapery and its occasional inaccuracy in archæological detail. The rudeness of execution and the similarity of certain mistakes in the ornamentation of the garments to those noted in the Stuttgart Psalter, suggest the tenth century rather than the ninth as the more likely date; while the analogy with Rhenish work (*cf.* fig. 2) makes it probable that some point on the Middle Rhine was the place of manufacture.

XX.—*Recent discoveries in the Cloister of Durham Abbey. By* W. H. St. John Hope, *Esq., M.A., Assistant Secretary, with Introduction by* Canon J. T. Fowler, *D.C.L., F.S.A., a Local Secretary for Durham.*

Read 18th June, 1903.

INTRODUCTION.

The custom of washing the hands before the principal meal of the day, based, as it is, upon common decency and convenience, has at all times been observed by civilised people. The Greeks and Romans, or at any rate the more leisured and luxurious among them, not only took their baths before the chief meal, but had water for their hands brought round repeatedly during the meal, which would be the more necessary when the fingers were used in eating much more than they are now.[a] The disciples of Christ were accused by the Pharisees and certain of the Scribes of transgressing the tradition of the elders by not washing their hands when they ate bread.[b] The "tradition of the elders" is abundantly illustrated in the literature of the Jews,[c] and similar traditions prevail among the Mohammedans and other Orientals. In religious minds the act of washing the hands has naturally acquired a symbolical meaning. Hence the *Lavabo* in the Eucharistic rite which is described by Cyril of Jerusalem (A.D. 348-386) as not merely for the sake of personal cleanliness, but as a symbolic act, connected with the words of Psalm xxvi. 6, "I will wash my hands in innocency, O Lord, and so will I go to thine altar."[d]

[a] Smith, *Dict. Antiq.* 1870, pp. 185, 186, and reff.; Becker, *Gallus*, tr. by Metcalfe (ed. 1895), 113.

[b] St. Matthew xv. 2; St. Mark viii. 3, 4.

[c] Mishna, Tract *Yadaim* (Hands) and the commentaries on it in the Talmud; J. Barclay, *The Talmud* (London, 1878), 324; P. J. Hershon, *A Talmudic Miscellany* (London, 1880), Index under "Hands."

[d] For other references see Smith and Cheetham, *Dictionary of Christian Antiquities* (London, 1880), ii. 938.

This symbolic act would be familiar to all monks from the very first, and when almost every act of daily life assumed a religious significance, it seems highly probable that such would be the case with the washing of hands at other times in the course of the day, and particularly in the early morning before entering the church, and later on when all were assembling for a meal which was regarded as a religious duty and assumed the character of a religious act. The early monastic rules, however, certainly indicate a reaction against Roman luxury and licentiousness under the Empire,[a] and, we may perhaps add, against Jewish scrupulosity.

Monastic ablutions were of two kinds, namely, the bathing of the whole body, which was done in the bath-house, and the washing of the hands and face, also done in the bath-house, probably, in earlier times, but at any rate from the eleventh century onward, at a laver in the cloister. The plan of St. Gall, c. A.D. 800, shows a bath-house in connection with the common-house or warming-house.[b] But it shows no cloister laver. Just so, the earliest monastic rules refer to bathing on rare occasions, but not to washing in a morning or on going into the frater. The rule of St. Benedict prescribes the use of baths for the sick, but to the healthy and especially the young, "tardius concedatur," unless it be the washing of feet.[c] Other early rules to the same effect are referred to in Smith and Cheetham's *Dictionary of Christian Antiquities* under LAVATORY. The letter of St. Augustine to a society of devout women, which formed the basis of the rule for Austin Canons,[d] says that baths are not to be taken with assiduity, but may be allowed, apparently, to persons in health, once a month. The rule for men[e] does not seem to recognise the bath except in cases of sickness, when, under medical advice, it

[a] Smith and Cheetham, ii. 939.

[b] *Archæological Journal*, v. 85.

[c] *De Septimanariis Coquinæ.*—Egressurus de septimana sabbato mundicias faciat. Linteamina cum quibus sibi fratres manus aut pedes tergunt, lauet. Pedes vero tam ipse qui egreditur, tam ille, qui intraturus est, omnibus lauent.—*Reg. S. Benedicti*, cap. xxxv.

De infirmis fratribus.—Balnearum usus infirmis, quoties expedit, offeratur. Sanis autem, et maxime juvenibus, tardius concedatur.—*Reg. S. Benedicti*, cap. xxxvi.

[d] Lavacrum etiam corporum ususque balnearum non sit assiduus, sed eo quo solet intervallo temporis tribuatur, hoc est, semel in mense. Cujus autem infirmitatis necessitas cogit lavandum corpus, non longius differatur: fiat, etc.—*S. Augustini Epistola* ccxi. in *Observances in use at the Augustine Priory at Barnwell*, ed. J. W. Clark, 1897, p. 14 n.

[e] Indumenta vestra secundum arbitrium prepositi lauentur, siue a vobis siue a fullonibus, ne interiores anime sordes contrahat munde vestis nimius appetitus. Lauachrum eciam corpori cuius infirmitatis necessitas cogit minime denegetur. Fiat sine murmure de consilio medici, ut eciam si nolit, iubente preposito faciat quod faciendum est pro salute. . . . . Nec eant ad balnea, siue quocunque ire necesse fuerit, minus quam duo vel tres.—*Regula S. Augustini*, in *Barnwell*, p. 14.

is to be taken without a murmur.[a] Lanfranc refers to baths being prepared before Easter and Christmas[b] for those who wish to have them,[c] and to the washing of heads with lather in the cloister.[d] At Barnwell the chamberlain was to provide

[a] Lavacra etiam, cuius infirmitas exposcit, minime denegentur. Sed fiat sine murmuratione de consilio medicinæ. Ita vt etiam siue lauari nolit ille, qui infirmus est, iubente seniore fiat, quod opus fuerit pro salute. Si autem nulla infirmitate compellitur cupiditati suæ non præbeatur adsensus.

Nota.—Iuxta hanc constitutionem S. Radegundis quæ S. Cæsarii Regulæ seruiebat, fundatrix cœnobii sanctæ crucis in vrbe Pictauensi balneum in eodem monasterio construi iussit ad vsum sanctimonialium, vt notum est ex S. Gregorio Turonensi lib. 10, hist. cap. 16.

Reg. S. Cæsarii Episcopi, cap. xxix. § 22, in S. Benedicti Anianæ Abbatis *Concordia Regularum* (Paris, 1638), 670.

Focos vero in schola pœnitentes (si fuerint) bini et bini per hebdomadas faciant. Similiter ad caput fratrum lauandum per singula sabbata, vel balnearum vsus per festas solemnitates præparent; aut si sunt alia extrema, pœnitentes faciant.

Notæ.—*In schola*, Id est, in dormitorio.

Ad caput fratrum lavandum. Olim monachi caput lauabant, quod apparet ex MS. Columbani Pœnitentiali: Pœnitentes fratres, quamuis opera difficilia et sordida efficiant, non lauent capita, nisi in die Dominico, id est, octauo. Sin autem, nisi in quintodecimo die, aut certe propter fluentium capillorum incrementum.

Vel Balnearum, etc. . . . . Legendum, *per certos.* Olim monachi et moniales quibusdam solemnitatibus instantibus, maxime Paschæ et natalis Domini balneis vtebantur. (Quotations from Concordia S. Dunstani cap. 3, Lantfrancus in decretis c. i. § 2, Vsitatorium monasterii Culturæ Cenomanensis, Beda lib. 4, hist. Angl. c. 19, Acta S. Vviboradæ martyris inclusæ in monasterio S. Galli, S. Augustinus, lib. 9, Confessionum, cap 12.) Neque hæc Regulæ S. B. aduertantur, qui non omnino a sanis balneum remouit, sed tardius concedendum edixit.—*Ex Regula cuiusdam Patris*, cap. xii. § 26, in *Concordia Regularum*, 830 ff.

Balnearum usus vel cura medendi summo adhibeatur studio. Sanis vero præcipue iuuenculis tardius concedatur.—*Ex Regula cuiusdam*, cap. xv. § 25, in *Concordia Regularum*, 672.

[b] St. Ethelthryth (Audrey) would hardly take a warm bath except before the greater festivals, as Easter, Pentecost, and Epiphany. Bede, *Eccl. Hist.* lib. iv. cap. xix. Plummer, in his note on the passage, shows such abstinence to have been a regular feature of the ascetic life, dating even from Apostolic times.

[c] Vigilia Thomæ Apostoli si dies Dominicus non fuerit radantur fratres et sic balneentur qui volunt balneari, ut duobus diebus, ante Dominicam nativitatis sint omnes balneati. Si necesse sit ipso Apostolicæ festivitatis die balneari possunt.—*Lanfranc* in *Reyner*, App. 213.

Feria tertia (tempore Passionis Dominicæ) radendi sunt fratres, in claustro simul ipsa die, et in crastino debent esse balnea præparata. Quæ quo ordine fiant, et quomodo illuc fratres ire, et qualiter ibi se habere debeant, superius dictum est cum sermo esset de balneis ante Christi nativitatem præparandis.—*Lanfranc* in *Reyner*, App. 218.

[d] Tunc lesciva in claustrum deferatur, et qui vult caput lavet, quisque sibi, nullus alii, præter magistros infantum, qui parvulis pueris, qui id non possunt, capita lavare debent.—*Lanfranc* in *Reyner*, App. 239.

soap for the baths of the brethren, as well as for shaving and washing of heads.[a] At Durham the same officer provided bowls for the washing of feet, and a tub in the sartry (tailor's shop), for the brethren to bathe in.[b] Whatever may have been the habits of the earliest monks, those of the Middle Ages seem to have paid as much attention to personal cleanliness as the average of people did in those days. Neither the rule of St. Benedict nor that of the Austin canons mentions the washing of the hands and face in the morning and during the day, but it is probably taken for granted that this was done, though it is not likely that any lavatory was provided. It may have been done in the bath-house, if they had no other place convenient for the purpose. It is stated by Viollet le Duc that a vessel of marble, stone, or metal was sometimes placed at the entrance of the frater.[c] The later regulations both of monks and of regular canons frequently refer to the brethren going into church or frater *lotis manibus*,[d] and the cloister laver is often

[a] Ad camerarium precipue pertinet aquam calidam prouidere ad rasturam conuentus, et saponem capitibus fratrum abluendis. Ad balnea fratrum, si petatur, saponem prouidebit.—*Barnwell*, 194.

[b] *Compotus fratris Johannis Fossor, Camerarii Dunelm.* 1324-5. *Expense necessarie.* In 13 boll pro pedibus fratrum lavand., 18*d*. . . . . in reparacione cacabi sartrine, 3*d*. *Exp. minute.* In reparacione unius cuve in sartrina in qua lavantur fratres, 5*d*.—*Durham Account Rolls* (Surtees Society, vol. xcix.), 167.

[c] *Dictionnaire de l'Architecture*, vi. 174, referring to *Dictionnaire du Mobilier*, l'article *Lavoir*.

[d] Cum appropinquaverit tempus horæ tertiæ pulsetur a Secretario modice signum minimum, quam skillam vocant, et statim pergant in dormitorium et calcient se diurnalibus et cultellos accipiant; deinde ad lavatorium vadant et prius lavent se et postea pectinent: dehinc ad ecclesiam veniant, aquam benedictam sumant, in chorum vadant, et incumbentes terræ infantes expectent. Cum vero infantes loti fuerint et se pectinare incœperint pulsetur majus signum ad Horam.—*Decreta D. Lanfranci pro ordine S. Benedicti* in Reyner, *Apostolatus Benedictinorum in Anglia* (Duaci, 1626), *Appendicis tertia pars*, 212.

Post horam prior pulset signum. Vel cui iniunxerit ipse. Quod si forte per negligentiam cibus nondum paratus fuerit, non pulset (signum) donec paratus sit, nec fratres abluant manus, sed interim sedeant in lectione donec signum pulsetar. Quod et ad omnes refectiones similiter teneantur. Ablutis igitur manibus et detersis, intrent refectorium, et venientes ante sedes suas inclinent se versus principalem mensam.—Guignard, *Les Monuments Primitifs de la Régle Cistercienne*, Consuetudines lxxvi., *De refectione*, 180.

Apries l'eure doit li prieuse souner u autre cui ele le coumande. et se li mangiers n'est aparellies par negligence se laist on à souner et à laver les mains. et siece on en leçon dusque adonc que on sounera. Et ce tiegne on à tous mangiers. Quant on a lavées ses mains et essuées se doit on entrer en refroitoir et aler chascune en son siege, et encliner à le haute table.—*Ancienne Traduction Française*, Guignard, 490.

Exeat Circator, et tintinnabulum pulsat ad refectorium, cunctique pariter illuc venientes

mentioned. There were two kinds of cloister lavers; the earlier ones were commonly round, polygonal, or multifoil, pouring forth streams of water through a number of little spouts, from which the water fell into a lower basin encircling the upper one. The later ones were usually in the form of a long trough with the water running in at one end and out at the other, or supplied from a

lavant manus, et intrant, expectantque Domnum Abbatem.—Ex antiquis consuetudinibus Germaniæ nu. 33, in Martene, *Monumenta Ritualia* (Bassani, 1788), lib. I. cap. viii. 29.

Sine ullo strepitu festinent lotis manibus introire refectorium.—Ex antiquo ordine conversationis monasticæ c. 11, in Martene, *Mon. Rit.* lib. I. cap. viii. 29.

Facto igitur signo, fratres intrent refectorium, et ablutis manibus inclinantes versus Crucifixum, stent in ordine suo dispositi ante mensas.—*Constitutiones Bursfeldenses*, in Martene, *Mon. Rit.* 29.

Quando percutitur cymbalum, si fratres in ecclesia fuerint, finita hora exeant cum processione ad lavatorium, quod si in claustro sederint, ad primum cymbali pulsum, statim surgentes libros in armario reponant, et in claustro ita se ordinent, sicut ad capitulum determinavimus. Congregatis itaque universis fratribus, prior iterum percutiet cymbalum, et fratres statim surgentes, junioribus præcedentibus et senioribus subsequentibus per ante capitulum cum processione ibunt ad lavatorium. Venientes autem secundum modum lavatorii se ordinent. Si non possunt simul omnes, juniores prius lavent, deinde seniores. Cum igitur singuli quique manus et laverint et deterserint, venient et stabunt in latere supra ad introitum refectorii, hinc inde ordinati secundum utrumque chorum versi ad se de contra, quousque laverint universi. Nullus qui comedere debeat illa hora in locutorio remaneat; sed mox ut fratres ad lavatorium venerint, debet exire, et cum aliis manus abluere. Ille etiam qui conventum tenet, hoc maxime cavere debet, ne postquam fratres laverint, moram faciendo faciat eos de foris refectorium diutius expectare. Procedente autem abbate ad lavatorium, percutiet prior semel cymbalum, et statim procedent omnes per ordinem, ita ut nullus præcurrere aut ordinem perturbare præsumat. Ingredientes autem refectorium dividet se uterque chorus hinc inde in utroque latere juxta mensas, etc.—*Antiquæ Consuetudines canonicorum regularium S. Victoris Parisiensis*, Martene, *Eccl. Rit.* 1788, Appendix, 253.

Die aliquantulum fulgente, prior considerans diei quantitatem, aliquando temporius, aliquando serius ante alios surgat, et campanulam dormitorii concutiet: tunc omnes fratres surgant, et expleta corporis necessitate, ordinate, ut dictum est, ad lavatorium veniant: ibi secundum modum lavatorii lavando se ordinent, et si simul lavare non potuerint, juniores prius lavent. Lotis manibus ad partem claustri quæ est a parte ecclesiæ venientes, hinc inde ordinati secundum utrumque chorum versi ad invicem alios expectent, quousque laverint universi. Cavere autem debent diligenter omnes fratres, ne cum manutergiis aut nares emungant, aut dentes fricent, aut sanguinem abstergant, aut aliquam immunditiam tractent; et similiter intelligendum est de mensalibus in refectorio, et aliis manutergiis in ecclesia: deinde ecclesiam ingrediantur, etc.—*Constitutiones Canonicorum Regularium S. Dionysii Remensis, Ord. S. Augustini*; Martene, *Eccl. Rit.*, Appendix, 297.

Post refectionem et gratias, ascendentes omnes dormitorium, dormiant usque at nonam: ad signum nonæ intrent ecclesiam eo modo quo ad primam; post nonam lotis manibus bibant simul in refectorio, et dato signo eant ad laborem usque ad vesperas.—*Primaria Instituta canonicorum Præmonstratensium*, Martene, *Eccl. Rit.* (Bassani, 1788), App. 326.

Hora competenti ante prandium vel cœnam a sacrista paucis ictibus campana pulsetur, ut si

long pipe at the back that delivered jets of water through a series of spouts. These long-trough lavers were sometimes placed in the line of the cloister-arches, and sometimes within arches sunk in the back-wall of the alley near the frater door. The earliest lavers of which we have any particular knowledge are those shown in the Norman plans of the hydraulic system at Canterbury, which plans are well reproduced and described in Professor Willis's work on the Conventual Buildings of Christ Church in that city. There were no less than four in the above monastery, all of the multifoil type, three of them sheltered by circular houses with conical roofs, and one in the North Hall. It is with lavers of this type that we are more particularly concerned in connection with Durham. There are, or were, others in a more or less perfect condition at Wenlock (Cluniac), Mellifont, Ireland (Cistercian), Peterborough (Benedictine),[a] Veruela in Spain (Cistercian),[b] Pontigny, basin only remaining, Thoronet, Fontenay (all in France and Cistercian),[c] Alcobaça (Cistercian) and Batalha (Dominican) both in Portugal.[d] Viollet le Duc says that in Spain the convents possessed magnificent "lavabos," and thinks that the great stress laid on abundant ablutions by their

qui foris sunt ad refectionem sine mora festinent: tunc prior pulset cymbalum. Quod si forte per negligentiam cibns nondum paratus fuerit, non pulset donec paratus sit; nec fratres abluant manus, sed interim legant donec cymbalum percutiatur: ablutis vero manibus et detersis, sedeant extra refectorium, donec prior nolam refectorii uno ictu percutiat, et tunc suo ordine ingrediantur, etc.—*Ibid.* 327.

De refectorio. Sciendum est quod quando non fit spatium inter missam et horam, debet fieri ante cymbali percussionem: qua pulsata, hebdomadarius incipiat, post cujus finem prior præcedens pulset cymbalum, et alii fratres euntes comestum, veniant per lavatorium, et lavent eo ordine quo mane, et disponant se ante refectorium donec laverint universi; deinde intrent refectorium: ita ut nullus præcurrere aut ordinem turbare videatur: sed dividat se chorus uterque hinc et inde juxta mensas suas, quilibet ante mensam suam, etc.—*Const. S. Dionysii Remensis, Ibid.* 299.

Egressi de dormitorio lotis manibus et capitibus pectinatis antequam alicubi diuertant, prius ad ecclesiam ire debent, vbi, aqua benedicta aspersi, pure oracioni deuocius insistentes, primum querant regnum dei et iusticiam eius.—*Barnwell*, 106.

Quando fratres exeunt processionaliter de ecclesia ad prandendum, si custos ordinis semel percusserit cymbalum, licite possunt fratres manus abluere, et in refectorium intrare, et sedendo expectare. Si autem cymbalum non percusserit, forte quia prandium non est paratum, uel quia panis est in clibano, uel quia celerarius cum claue est alibi occupatus, tunc non debent manus abluere, set in sedibus suis in claustro sedere, et orare uel legere, quousque cymbalum percuciatur. —*Barnwell*, 156.

[a] See *post.*

[b] G. E. Street, *Gothic Architecture in Spain* (London, 1865), Pl. xxiii.

[c] Viollet le Duc., *Dictionnaire de l'Architecture*, vi. 170 ff. under *Lavabo.*

[d] Photographs in possessionf the Rev. Dr. Farrar.

Arab neighbours influenced the construction of their cloisters. But he does not name any examples. The first laver at Durham was sheltered by a square building; the form of the basin is unknown, but it appears to have had a circular substructure. This earlier laver was probably found to be too small to accommodate the monks, and so a larger one was made on the site of the former one, having an octagonal basin in a round building over which was a dovecot covered in with lead; the whole was standing in 1593, when it was described in *Rites of Durham*.[a] At some time unknown, the building was demolished and its site obliterated, but the marble basin was placed in the middle of the garth, where it has long misled writers on the cathedral and the general public, who have supposed that it was *in situ*.

Recent excavations, made at the suggestion of Mr. W. H. St. John Hope, have resulted in the discovery of the foundations both of the earlier and of the later lavers "over against the frater house door." The cloister well, which had long been lost, has also been opened and cleared out to the bottom. There are some notices connected with it in the account rolls.[b] The bathroom was under the direction of the chamberlain, who provided hot water, towels, soap, and other requisites.[c] The laver was a part of the fraterer's charge, as being closely connected with the frater itself. At Durham he provided the new laver,[d] and at Barnwell he saw that the laver was always clean and in proper order, and that there should always be sand and a whetstone ready there for sharpening knives.[e] The cloister garths of monastic churches were often furnished with wells; these formed the original provisions for water before the hydraulic systems were formed for supplying the lavers, and these wells were retained in reserve, to be used when the new sources failed or required repairs.[f]

I will now leave the results of recent excavations to be described by Mr. Hope.

J. T. F.

[a] See *post*.

[b] See *post*.

[c] Camerarii est procurare . . . . tersoria in claustro pendentia.—*Lanfranc* in *Reyner*, App. 237.

[d] See the account in the Appendix to this paper.

[e] Ad ipsum (refectorarium) eciam pertinet lavatorium et sordes et feces que sunt in fundo lavatorii mundare, ut fratres honeste aqua munda possint manus et ora sua lauare; sabulum et cotum pro purgandis et acuendis cultellis semper ibi paratum habere.—*Barnwell*, 154.

[f] There is a well within the abbey precinct, other than that in the cloister, of which the following notices occur in the accounts:

1338-9.—In mundacione fontis infra Abbathiam, 2s.—*Rot. Burs.* in *Rolls* (Surtees Society, vol. c.), 536.

1340-1.—Et in structura unius domuncule lapidee supra le Welleheued, 23s. 6d.—*Ibid.* 539.

1349-50.—In juncturis, Stapils, Hupis, Gugeons, Girdils, Spykyng, et Scotnayls pro fonte infra

The excavations referred to by Dr. Fowler were undertaken during the latter part of March last, and were devoted (1) to proving what I had ventured to suggest, that the laver stones in the middle of the garth would be found to be resting merely on the ground, and (2) to the trenching of the probable site of the lavatory from which they came in the south-west corner of the cloister.

The remains discovered, when I first saw them on 6th April, presented a confused tangle of rough foundations (Plate XXXIV.), but a little patient examination soon resolved them into order.

The oldest in point of date is a rubble foundation, 2 feet 10 inches wide, running across the cloister in a northerly direction from nearly opposite the third buttress from the south-west angle. (See plan, Plate XXXV.) It was laid bare for about 30 feet, and traced with a "pinch" or crowbar for 24 feet 6 inches further, but could not be felt beyond that.

The southern end of this wall has been reduced in thickness to 2 feet 6 inches by cutting back its eastern face, and against this narrower part has been built a structure 15 feet square within. Of this only the foundations, about 2 feet thick, of the north and east sides are left. Whatever had remained of the south wall was destroyed in recent years during the making of a deep drain round the cloister.

In the middle of the area of this building are two pairs of stones, 8 inches high, arranged as if forming part of a circle about $3\frac{1}{2}$ feet in diameter; but the

Abbathiam et pro grangia de Beaurpayre de novo edificanda, de proprio ferro, 3s. 3d.—*Ibid.* 550.

1354-5.—In una sera reparanda pro le Welhousdore, cum 1 clave empt. pro eodem, 4d.—*Ibid.* 555.

1384-9.—Item Henrico Plumer pro mundacione fontis infra Abbathiam, 3s.—*Ibid* (vol. ciii.), 595.

1466-7.—pro punctuacione super stabulum hospitum et le Wellehouse infra abbathiam, 13s. 6d.—*Ibid.* 641.

1470-1.—pro emendacione unius fontis in orto curiali abbathie, 6s. 8d.
pro nova tectura unius parve domus supra fontem in orto Abbathie, 2s. 6d.—*Ibid.* 643.

The following notices of the Sartry well are also found:

1324-5.—repar. del buket de fonte, 4d.—*Rot. Camerar.* 167.

1342-3.—in . . . . reparacione fontis sartrine.—*Ibid.* (vol. xcix.), 170.

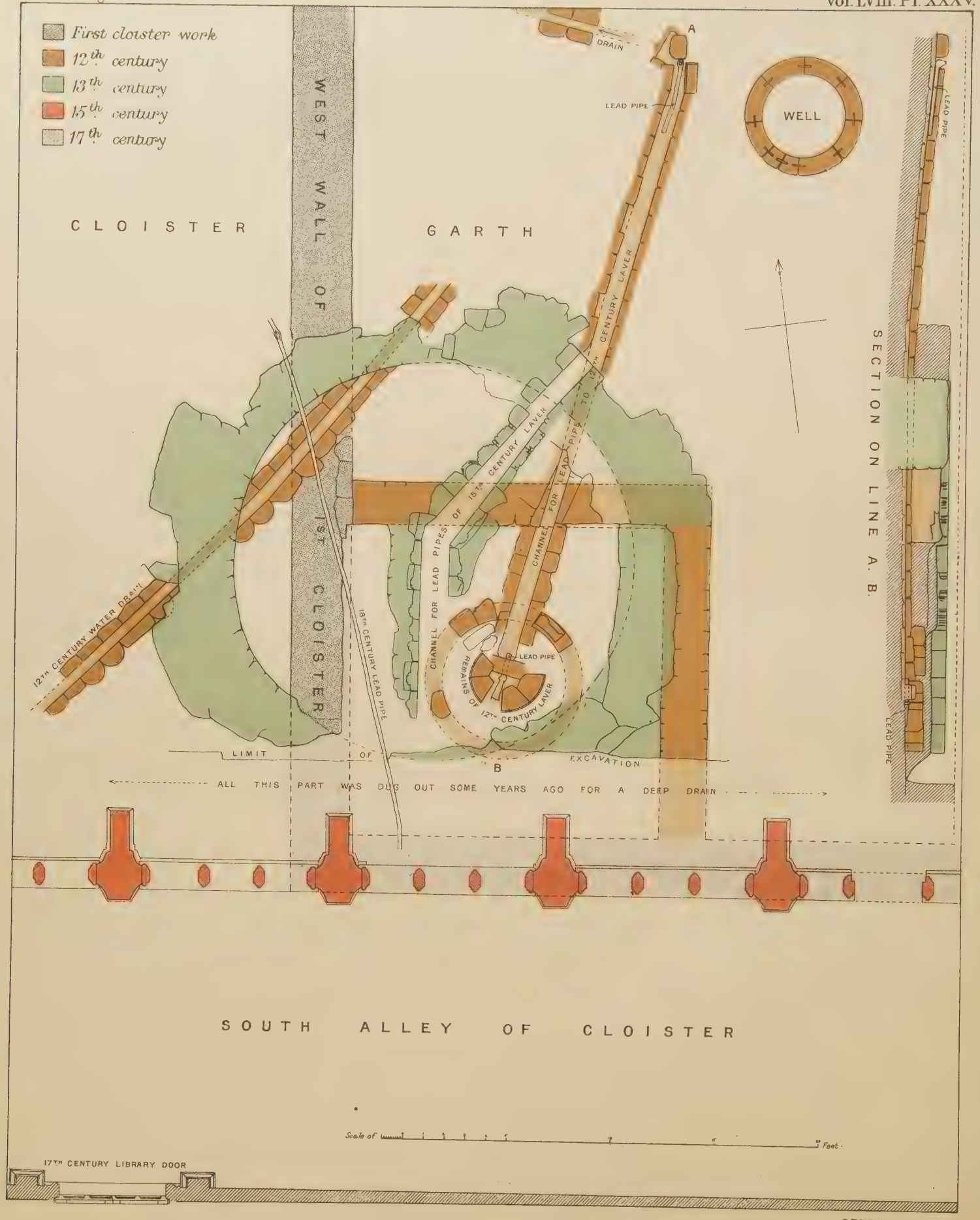
1447-8.—in repar. cujusdam fontis ex opposito le Saretree, ac unius gardini ibidem vocati Paradise, 5s. $10\frac{1}{2}$d.—*Ibid.* 186.

The Sartry was the tailor's shop, which was in the same building with the Chamberlain's checker and the bath-house, afterwards assigned to the first prebendal stall.

There is a well in the Galilee, in a small building projecting from its west wall, but no notices of it have been found in the Rolls.

DURHAM ABBEY.—FOUNDATIONS OF LAVATORIES UNCOVERED IN 1903.

Published by the Society of Antiquaries of London, 1903.



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DURHAM ABBEY.—FOUNDATIONS OF LAVATORIES UNCOVERED IN 1903.

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radius to which they are actually worked is that of a circle with a diameter of 4 feet. They must therefore either have been misplaced or have originally belonged to something else. They have a slight chamfer on the outer edge, and one is made out of a previously worked stone. (Plate XXXVI.)

Round them are the remains of a larger ring of stones, of which only five are left in place. They are curved within to a radius of 3 feet, but are rough outside and of unequal thicknesses. (Plate XXXVI.) Upon one of them stands,

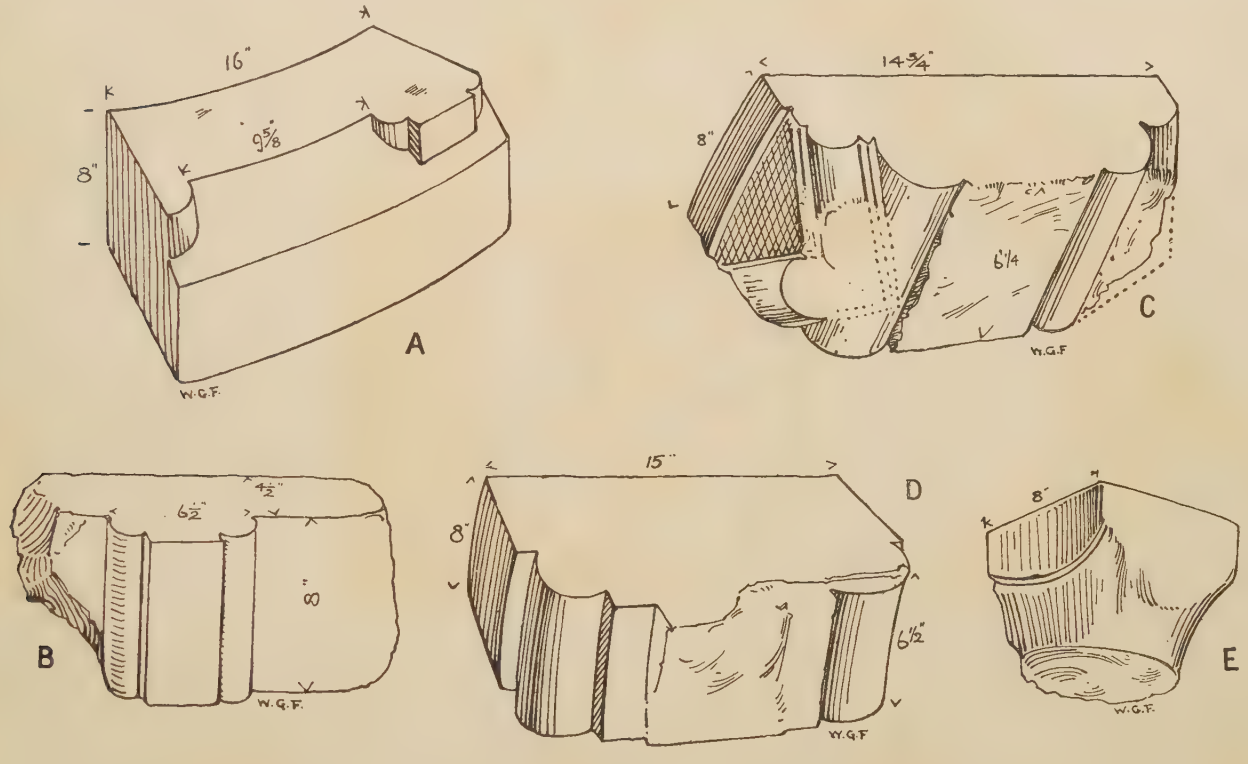


Fig. 1. Durham Abbey. Architectural remains of the Norman lavatory.

apparently *in situ*, though slightly displaced, the solitary survivor of a series of wrought ashlar stones that evidently formed a low circular wall to carry the laver. It is worked to the same curve as the foundation, and is 8 inches thick, the same in width, and has on the outside a broad chamfer. On this chamfer are the footings of a series of vertical ribs 6 inches wide and $9\frac{3}{4}$ inches apart, which if continued round would divide the outer face of the wall almost exactly into fifteen panels or compartments. (Fig. 1, A.) The space within the wall was purposely left hollow to allow of access to the pipes.

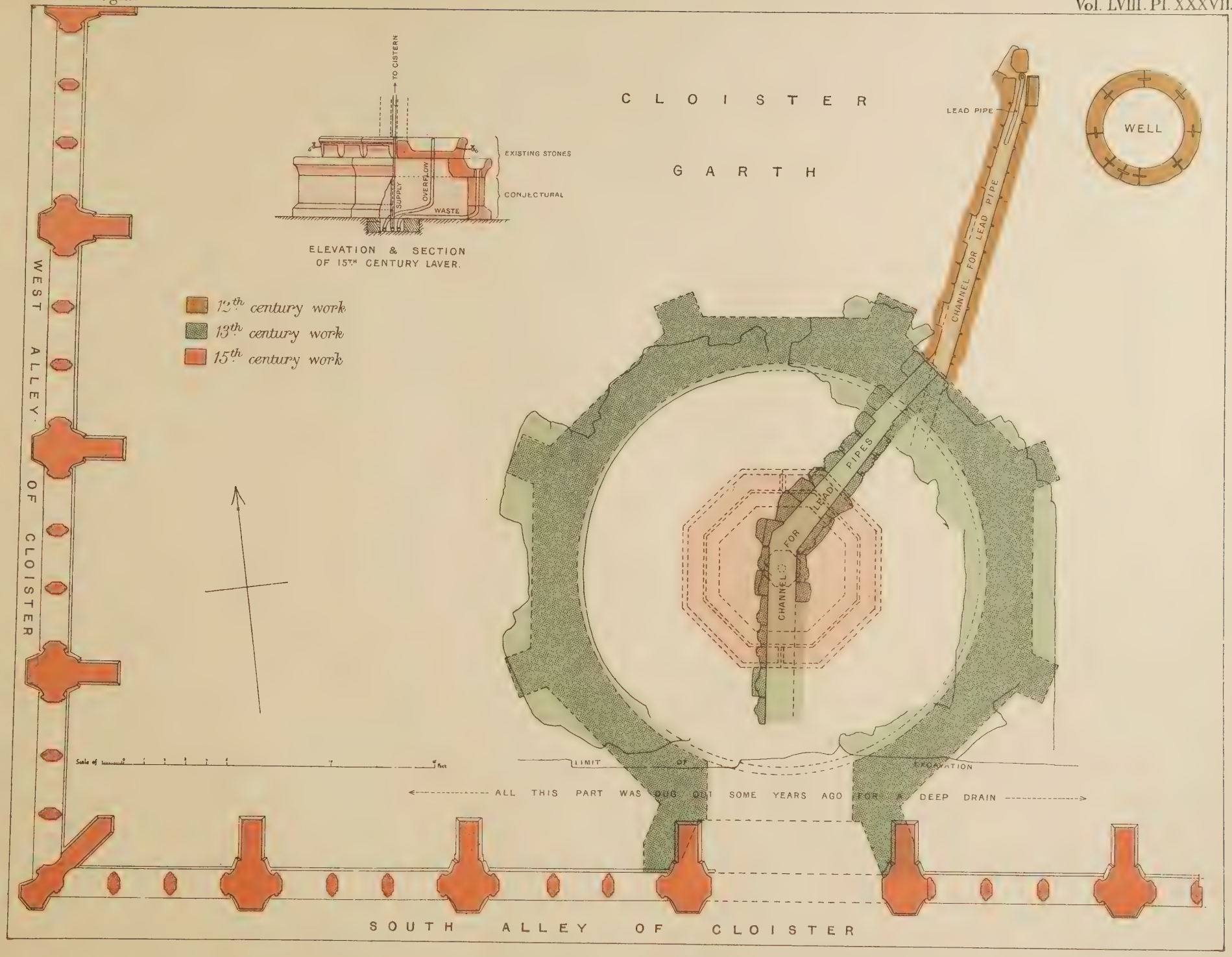
Within the inner group of stones lay a piece of lead piping of the usual medieval construction, and with an external diameter of $2\frac{3}{4}$ inches. It consisted of a straight piece 17 inches long, cut off at one end but with a joint at the other. From this joint, which is exactly in the middle of the group of stones, there projects a further length of 13 inches. This was once longer and vertical, but has been roughly shortened and then flattened down. The piece of pipe is kept in place by a stone fixed over it. From this there extends northwards towards the middle of the cloister a stone channel about 9 inches wide and 3 or 4 inches deep for the continuation of the pipe.

The structure, apparently of late twelfth-century work, to which these remains belonged was replaced in course of time by a larger and more ambitious one; but of this only the rubble footings remain. They overlie and intersect both the older wall and the foundations of the Norman lavatory and clearly belonged to a building about 20 feet in diameter, which was circular within and eight-sided without. In addition to the foundations of the enclosing wall there are within them the remains of a stone channel about 15 inches wide and 9 inches deep. It begins against the south wall and runs due north to the middle of the building, but then deflects north-eastwards and continues to the further side of the foundation of the circular wall, where it ends just over the earlier channel already referred to. The sides of the later channel are formed almost entirely of wrought stones. Most of these have been taken from the circular wall that supported the Norman laver, and consist both of base stones and the courses above them. All have worked upon them sections of the filleted ribs or attached shafts that divided the panels. (Fig. 1, A B.) In order the better to fit these stones for their present positions the curved backs have been made straight. There are also a broken Norman cushion capital (fig. 1, E), and several moulded voussoirs of arches. One of these is 15 inches across, with a roll on each side, and perhaps belonged to an entrance. (Fig. 1, D.) The others, of which three have been found, are of the same date but $14\frac{3}{4}$ inches across, and have a bold zigzag moulding on each face. (Fig. 1, C.) They are evidently part of an arcade, and, like the laver stones, no doubt belonged to the Norman lavatory. This seems to have been enclosed, not by walls with windows, but by an open arcade of three arches on each side, carried by detached shafts standing on a dwarf wall with the entrance on the south side. They would thus resemble the contemporary cloister arcade. One of the arch stones of this Norman cloister has been unearthed in the south-west corner of the garth during the recent excavations.

One other channel, perhaps a drain from the cloister, was found within the

DURHAM ABBEY.—FOUNDATIONS OF 12th CENTURY LAVER.

Published by the Society of Antiquaries of London, 1903.



C.F.KELL & SON, LITH

DURHAM ABBEY.— FOUNDATIONS AND CONJECTURAL PLAN OF 13TH CENTURY CONDUIT.

Published by the Society of Antiquaries of London. 1903.

limits of the later lavatory. It passes under its north-west part diagonally from north-east to south-west, as shown in the plan, and is clearly of earlier date than the lavatory itself. It is 6 inches wide and $5\frac{1}{2}$ inches deep, with its sides partly formed of wrought stones, five of them being sections of a large attached semi-cylindrical shaft of Norman date.

The later lavatory has so completely disappeared, with the exception of its foundations, that not a single ashlar stone belonging to it can be identified. Portions of the marble laver that stood within it indeed remain, but they give no clue to the form or fashion of the structure that sheltered them. For this we must turn to the description of it in the work known as "Rites of Durham," which was written, as the original heading shows, in 1593, when the lavatory was still in existence. It was published by the Surtees Society in 1844, but having been long out of print is now being re-edited for the Society by Dr. Fowler. The following is the account in the new edition of "THE LAVER OR CONDUIT," as it is called:

> Within y^e^ cloyster garth over against y^e^ fraterhouse dour, was a fair laver or counditt for y^e^ mouncke to washe ther hande & faces at, being made in forme Round covered w^th^ lead and all of marble saving y^e^ verie uttermost walls. W^th^in y^e^ w^ch^ walls yo^w^ may walke rownd about y^e^ laver of marble having many litle Cunditte or spoute of brasse w^th^ xxiiij^o^ Cockes of brasse Rownd about yt, havinge in yt vij^o^ faire wyndowes of stone woorke, and in the Top of it a faire dovecotte, covered fynly over above w^th^ lead, the workmanship both fyne & costly as is apparent till this daie. And adioyninge to y^e^ est syde of the counditt dour, ther did hing a bell to geve warning, at a leaven of y^e^ clock, for y^e^ mouncke to cũme wash and dyne, having ther closette or almeries on either syde of y^e^ frater house dour keapt alwaies w^th^ swete and clene towels as is aforesaid to drie ther hande.[a]

From this description we learn that the building itself was of stone, and "in forme Round," that is, circular in plan, at any rate within, as its foundations show. (Plate XXXVII.) It was also eight-sided, since it had seven "faire wyndowes of stone woorke," the eighth side containing the entrance from the cloister alley to which the building was attached. Between the windows, as may be seen from the foundations, were broad pilaster buttresses, but it is impossible to say whether the intervening wall was curved as within, or worked into an octagon. The building appears not to have been vaulted, but to have had a wooden ceiling surmounted by a pyramidal roof covered with lead and containing a dovecot. On the east

[a] *Rites of Durham*, 1593 (Surtees Society, vol. cvii.), 82, 83. See also Notes, 261, 262.

side of the entrance, perhaps in a little turret or gable surmounting the buttress, hung the frater bell.

The dovecot was probably a later addition. It was still in existence in 1593, when a charge of £4 5s. was incurred "for mendinge, saudringe, and newcastinge y^e^ west side of y^e^ Church, *over y^e^ dovescott*, and part of y^e^ Dortor leades," etc.[a]

The laver that stood within, and probably the floor also, was "all of marble," with twenty-four cocks or taps of brass round it. The bill for the making of this has fortunately been preserved and was printed by the Surtees Society in 1839.[b]

The heading states that it is "The account of Dan Thomas Ayere, supervisor of the work, of the receipts and expenses of a certain new marble laver in the cloister of Durham, A.D. 1432-3."

The receipts amounted to £23 7s. 3d., and were made up of £18 6s. 8d. subscribed by the sub-prior and the monks, and the priors of the several cells of the monastery, and of £5 0s. 7d. from the officers of the convent and other sources.

The expenses begin with a number of payments to Thomas Hyndley, mason (*cementarius*) of

103s. 10d. "for the getting or winning (*lucracione*) of the marble stones in the quarry at Eggleston;" of

42s. 1d. "for the drawing out of the quarry, the scappling (*scapulacione*), and "wayning" of the said stones;" and of

110s. 3d. "for the polishing (*dolacione*) of the marble stones and a payment made to Robert Nurry about the making of a lodge in the cemetery of Durham for working the said stones."

The abbot of Eggleston charged 20s. for the rent of the quarry, and Thomas Hyndley also received 3s. 4d. by command of the prior, and 40s. as a gratuity according to agreement.

Besides a number of small items, there are payments of 30s. to John Pykyryng, mason (*cementarius*) for 10 weeks at 3s. and 3 weeks at 2s. 6d., and to John Fethyrstonhalgh, apparently his mate, of 30s. for 5 weeks at 3s. and 6 weeks at 2s. 6d. Two other men, one of whom is called *latamus* and "mason" in other accounts, each received 3s. for a week's work. John Pykyryng also had an additional 12s. for his work *per vices*. Thomas the plumber for his

[a] Durham Account Rolls (Surtees Society, vol. ciii.), 735.

[b] *Historiæ Dunelmensis Scriptores Tres* (Surtees Society, vol. ix.), Appendix, No. cccxlvi. p. ccccxliii. See also the Appendix to this paper.

labour about the said work, probably in connexion with the pipes and waterworks, received 10s. Laurence the latoner of Newcastle was paid 9s. "pro factura le spowtys," and William the slater 8d. "pro le blaunchyng" or whitewashing for 2 days. Besides the items relating to stones already quoted, there is a separate charge of 28s. 4d. "for the carriage of three marble stones from the aforesaid quarry (that at Eggleston) to Durham."

There can, I think, be little doubt that these are the very stones that now lie in the middle of the cloister, and which formed the bason and trough of the

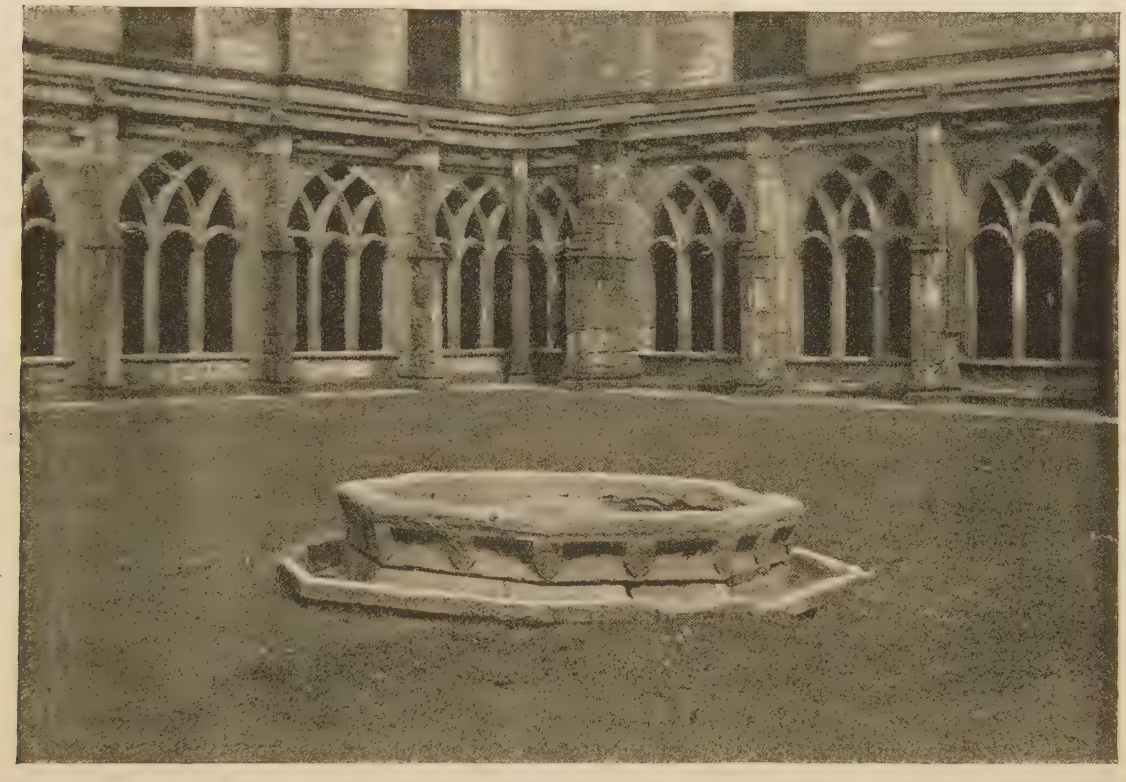


Fig. 2. Durham Abbey. Marble Stones of the fifteenth-century laver, now lying in the middle of the cloister. (From a photograph by Mr. J. R. Edis, of Durham.)

laver itself. Their large size perhaps explains the special charge for bringing them to the Abbey.

The bason is wrought out of a single stone. It is octagonal in form, 7 feet in width and 1 foot in thickness, and is hollowed out to a depth of 8 inches. The sides, which are 5 inches thick, are sloped outwards, and have in the middle of each a blank shield; there is another on each point. The sides are slightly recessed so as to leave the shields in relief. In the middle of the bason is the lower part of a conical 8-sided shaft or pillar, perforated for the supply pipe, but

too much injured to show what it supported. There is also in the bottom of the bason a lead plug which marks the place of the overflow pipe. The bason rests upon the other two stones which unite to form the trough. Although they project about 13 inches beyond the bason, and have therefore a length of 9 feet 6 inches, their greatest width is only about 2 feet, the part under the bason being cut away so as to lessen the weight; their thickness is $10\frac{1}{2}$ inches. The surface of each is hollowed out with a trough sloping from a depth of $2\frac{1}{4}$ inches at the ends to 6 inches in the middle, where there is a hole 5 inches in diameter to carry off the waste water.

According to "Rites" the marble laver had "many litle Cundittes or spoutes of brasse with xxiiij Cockes of brasse Rownd about it." One Laurence, a latoner of Newcastle-on-Tyne, as noted above, was paid "pro factura le spowtes," which seem to have been disposed as follows. In three adjoining sides of the bason and in the three sides opposite them, are pierced pairs of holes. They are $2\frac{1}{2}$ inches from the bottom, 17 inches apart, and 1 inch in diameter. Since there are only twelve holes, the pipes that issued from them must each have carried two cocks. As the stones now lie, the two sides that are unperforated for cocks are over the joints of the two trough stones and the shallow ends of the waste channels. This seems to have been the original intention and arrangement.

It is unfortunate that nothing beyond these stones is left to show how the laver was worked and arranged. The bason and trough no doubt occupied their present relative positions, but they must have been raised up from the floor to a convenient height. If we may assume that the missing substructure, which was also formed of marble slabs, was 2 feet high, the edge of the bason would be about 4 feet from the floor. The supporting wall probably had an opening in the side for access to the pipes within. These pipes consisted of (1) the main or rising pipe, (2) the overflow pipe, and (3) the two waste pipes. Of the source of supply something will be said presently. The water from the overflow was no doubt used elsewhere, and a memorandum in the middle of the lavatory building account, "that the same Dan Thomas Ayere caused to be made at his own costs the running aqueduct into the cellar," may show what became of it. There is nothing in either lavatory to indicate how the waste water was disposed of, but it was probably carried off by lead pipes to an external drain.

It will be noticed that Dan Thomas Ayere's account does not make any mention of the structure within which the marble laver stood, nor of its "faire wyndowes of stone woorke" or the "faire dovecotte" in the top of it. We must therefore conclude that the octagonal building was of different date.

There are several reasons that compel us to adopt this view.

In the first place the building can not have been symmetrically placed with regard to the bay of the cloister alley from which it was entered, but was somewhat to the west of it. It can hardly therefore have been contemporary with the alley itself. Moreover, it is, I think, reasonable to assume that had it been contemporary with the existing cloister work it would have corresponded to it architecturally as to the thickness of its walls, the projection of its buttresses, and the design of its windows. But the foundations lately uncovered show that it did not correspond in any of these features, but had thicker walls, broad and shallow pilaster buttresses, and windows of much less span.

There is also one other fact to be gleaned from Dan Thomas Ayere's account. This concludes with these items:

> In sawing of boards for the pentise at the entry (*pro le pentees in introitu*), 6^{d}.
> To the carpenter for his labour about "le pentees," 14½^{d}.
> In nails bought for the said work, 6^{d}.
> To Thomas the plumber for his labour about the aforesaid work, 12^{d}.

Now, the cloister alleys had only lately been entirely reconstructed at the cost of Bishop Skirlaw and his executors, and the connexion between them and the lavatory, if it were an older building, must necessarily have been temporarily done away with. The new work being completed the lavatory was again joined to the alley by a short length of pentise covered with lead. The plan of the foundations shows that this was needed, and traces of it may be seen on the cloister wall.

Finally there is this other documentary evidence, that in a list of the various buildings erected and repairs done within the abbey during the twenty-nine years when John Wessington was prior, namely from Christmas, 1416, to Whitsunday 1446, there occurs:

> Item reparacio lavacrorum cum armariolis pro manutergiis se extendit ad xxvj^{l} v^{s}.[a]

This "repair," as we have seen, must have been simply the construction of a new marble laver at a cost of £23 7s. 3d., and as another account of the same date[b] gives 27s. 2d. as the cost "of a certain almery in the cloister on the right hand of the frater door," we get a total of £24 14s. 5d., which is very nearly the £26 5s.

There yet remains another point to be noticed, that whatever the fashion may

[a] *Historiæ Dunelmensis Scriptores Tres* (Surtees Society, vol. ix.), p. cclxxiii.

[b] *Ibid.* Appendix, No. cccxlvii. p. ccccxlv.

have been in the twelfth century, all the cloister lavatories of later date than the middle of the thirteenth century of which remains exist in English monasteries are invariably built of the long trough form against the inner or outer wall of the cloister alley, in the immediate neighbourhood of the frater door.

The plan of the Durham lavatory would accordingly indicate that it was a work of earlier date than the introduction of the other form, and I think it is possible to show not only that it can be little later than the Norman one, but how it came to be erected at all.

It has already been pointed out that the older lavatory was built against an earlier wall. Now there are reasons, too long to enter into here, for supposing that this wall belongs to the western alley of an earlier and smaller cloister than that existing, and if so the square lavatory stood in the south-west corner of it. But early in the thirteenth century a new western range of buildings was erected to the west of whatever then served as such, and so enabled the cloister to expand to its present form and size. The old western alley would then be taken down, and with it probably the square lavatory, and a new eight-sided lavatory, more in keeping with the enlarged cloister, be built in its stead.

This suggestion of an early thirteenth-century date for the new lavatory is confirmed by comparison with other like structures of similar plan and arrangement, but before describing these there is a further point of interest with regard to the Durham examples which had better be mentioned here.

In examining the several channels that intersect the recently exposed foundations it was seen that they all appeared to converge on a spot in the cloister near the reputed site of an old well; I accordingly obtained leave from Dr. Farrar, the canon-in-residence, the Dean being away, for the excavations to be extended in that direction.

The channel leading from the older lavatory was first traced, and found to extend in a straight line for a further 15 feet, when it ended abruptly against a stone. In its northern extremity lay another section of lead pipe, $3\frac{1}{2}$ feet long and $1\frac{3}{4}$ inch in external diameter, with the junction of a vertical upward continuation at its further end. A supposition that the channel would be found to lead to the well was negatived by the fact that its level rose gradually as it extended northwards from the square building, the difference of level in the 15 feet being a little over 1 foot.

From near the stone where the channel ended another channel leads off in a westerly direction, but this was not followed.

Search was next made for the well. This was soon found at a distance of about 3 feet from the pipe end, and immediately to the east of it. It is 4 feet in diameter, lined with ashlar, and surmounted by a plain coping, the stones of which are cramped together with iron cramps run in with lead. The top of the well was only just below the turf of the cloister. It has since been cleared out and found to be 47 feet deep. The lower part is sunk in the rock and now contains about 10 or 12 feet of water.

The questions next arise, what was the object of the rising channel in the garth, and of the adjoining well, and what possible connexion can there be between them? A reference to the Canterbury drawing noticed by Dr. Fowler not only makes all clear, but illustrates in a remarkably interesting way the methods used by the monks to obtain a constant supply of water.

The monastery of Durham, like that at Canterbury, was supplied with water from a conduit which stood, probably where its successor stands to-day, on the highest point of the precinct, a little distance due south of the abbey kitchen. The water was brought to this by pipes from a spring or springs on the other side of the river Wear, probably early in the thirteenth century, when the new octagonal lavatory was built, and was then distributed by gravitation through lead pipes to other conduits in different parts of the monastery, including that in the cloister.

Now the Canterbury drawing shows in the infirmary cloister, in addition to the still existing building of the head conduit, a smaller conduit or laver in front of the infirmary itself, which it supplied. Beside this is depicted a well (*puteus*) surmounted by a low wall of masonry, and between it and the laver is a pillar with a large capital and base.[a] This pillar is placed over the pipe that conveyed water from the overflow of the cloister laver to the infirmary laver, and its use is explained by the note:

> Columpna in quam ductu aque deficiente potest hauriri aqua de puteo et administrabitur omnibus officinis;

which may be translated:

> Pillar into which, when the water supply fails, water from the well can be poured and will be supplied to all the offices.

[a] I am indebted to Mr. Micklethwaite for reminding me of this interesting arrangement.

The capital of the pillar was therefore evidently a large funnel and the pillar itself a stand-pipe.

The arrangement at Durham must have been similar.

The lost vertical end, or rather beginning, of the lead pipe originated in such a pillar or *columpna* as that at Canterbury, from which water drawn from the well would flow by gravitation to the laver. The earlier laver was probably always so supplied before the water from across the Wear was brought into the abbey, but the older system was continued in time of need.

Of this there are several interesting proofs in the Durham account rolls that have lately been edited by Dr. Fowler, and to whom I am indebted for the reference.[a]

In the Bursar's Roll for 1338-9 is a payment of 8s. "to women carrying water from the Wear to the abbey for the bakehouse, brewhouse, and kitchen, at divers times when the pipe was frozen," and in the Roll for 1339-40 are the following items :[a]

To women carrying water for the brewhouse and bakehouse and kitchen in the week after the feast of the Purification because the pipe was frozen, 6s.

In drawing water from the draw-well in the cloister for the same, and for work about the pipe, 16d.

In cleaning the well within the Abbey, 2s.

[a] Notices of the Lavers and the Well in the Cloister-garth, in the Durham Account Rolls (Surtees Society, vols. xcix. c. ciii. 103) :

1278.—In reparacione lavatorii ad hostium Refectorii, 7s.— *Rot. Burs.* p. 486.

1316-17.—In plumbo empto pro Lotorio Claustri, 13s. 11d.—*Ibid.* p. 513.

c. 1337.—In omnimodis expensis factis circa emendacionem Lotorii Conventus in Claustro, 10li. 9s. 4d. —*Ibid.* p. 535

1338-9.—Et mulieribus portantibus aquam de Were usque ad Abbatiam pro pistrina, Bracina, et Coquina per diversas vices quando pipa gelidata fuit, 8s. Mulieribus portantibus aquam pro bracina et pistrina et coquina in septimana post festum Purificacionis eo quod pipa fuit gelidata, 6s. In aqua Wyndanda de fonte tracticio in claustro ad idem, et pro opere circa pipam, 16d.—*Ibid.* p. 536.

1368-9.—In reparacione lavacrorum in claustro, 26s. 8d.—*Ibid.* p. 575.

1473-4.—Et pro 3 longe (*sic*) rapys, vidz. pro carecta, ustrino, et fonte in claustro, 4s. 4d.—*Ibid.* p. 644.

1557-8.—In factura unius hostii pro le lavers, 8d.—*Treasurer's Book*, *Ibid.* p. 715.

1570-1.—For mending a sink at the Lavers, 7s. 8d.—*Ibid.* p. 717.

1593.— Plumber's work ouer y^{e} douescott.—*Miscellanea*, *Ibid.* p. 735.

In 1473-4 one of three long ropes that cost 4s. 4d. was "pro fonte in claustro."

That the *columpna* was also used in connection with the later laver may perhaps be shown by the difference in the sizes of the remaining pieces of lead pipe, that belonging to the Norman laver being of larger diameter than the other.

In clearing out the well a number of interesting objects came to light, including:

(i) portions of a grave-cover of Frosterley marble, with an inscription to Henry of Horncastle, prior of Coldingham from before 1266 to after 1279;
(ii) three pinnacles of fifteenth-century work;
(iii) the lower portion of an image with boldly-cut drapery, with shoes on the feet;
(iv) some smaller fragments of sculpture;
(v) some thin bricks, measuring 9 inches by 5 inches, and 1 inch in thickness, with a black glaze, apparently floor-tiles;
(vi) fragments of pottery of various dates;
(vii) a great number of animals' bones; and lastly
(viii) the chain, hoops, and a few decayed wooden staves of the bucket.

Our paper would be incomplete without reference to such other examples of cloister lavatories in these islands as resemble those formerly at Durham in plan and arrangement.

Both of those shown in the Canterbury drawing as standing in the monks' cloister and the infirmary cloister respectively have disappeared; the latter at some uncertain date, the former when the cloister was begun to be reconstructed by Prior Chillenden at the close of the fourteenth century. The lower part of the Norman head conduit still exists, an octagonal structure that supported the great cistern and a laver for the use of the monks. The present upper story is another of Prior Chillenden's works, but the cistern and laver have long disappeared. The old lavatory in the monks' cloister seems to have been square, like the Norman one at Durham. Its sides were open arches, and its roof a tall pyramidal one covered with lead. The laver had an octofoil bason, with a pillar in the middle, surmounted by a second bason, into which the water was received from the head conduit. The infirmary lavatory was

of similar plan and design, but apparently smaller, with a single sexfoil bason. It should be noticed that the great conduit, although actually round in plan and eight-sided, is shown in the drawing as square; it is therefore possible that the other two lavatories were really of the same form also.

The remains of another lavatory were excavated some years ago in the cloister of the Cluniac Priory of Wenlock, Salop, by Mr. C. Milnes Gaskell. These consist of the foundations of an octagonal building 20 feet wide, which had on seven of its sides an arcade of two open arches carried by coupled columns; in the eighth side was the entrance from the cloister alley. Within the building is the base of a circular laver formed, like that of Durham, of the local marble. The trough was 11 feet in diameter and 7 inches thick, and was raised upon a circular wall 2 feet 4 inches high, faced with marble panels, two of which are richly sculptured. A low step encircles the whole, and a passage through the middle permitted access to the pipes. Of the bason that rose above the trough, a number of fragments remain, showing that it was elaborately carved outside and ornamented with a kind of arcade within. There are also some pieces of a second bason similarly decorated, but all the fragments of the superstructure are so shattered that although I have made more than one attempt with the actual pieces it is difficult at present to say how they were arranged. The work belongs to the closing years of the twelfth century, and is probably contemporary with the square lavatory formerly at Durham, but in plan it exactly illustrates what seems to have been that of the later Durham example.[a] In one corner of the building is a small well. "Le laver well" is also mentioned as existing at Ely in 1516-17.

A lavatory possibly of similar form to that at Wenlock stood in the cloister of another Cluniac Priory, that of Lewes in Sussex. All that now remains of it is an underground domed structure through which the pipes were brought. This was reached originally by a passage or tunnel from the subvault of the frater, which was built on a lower level than the cloister owing to a sudden fall of the ground. The Lewes lavatory was no doubt also of the twelfth century.

The only other example of these lavatories now standing is at the Cistercian abbey of Mellifont in Ireland. It was an octagonal structure, with a wide arched opening in each of its sides, and originally vaulted to a central pillar around which

[a] The Wenlock lavatory is fully illustrated, with plan and drawings by Mr. Roland W. Paul, F.S.A., in *The Builder* for 14th December, 1901 (lxxxi. 530, 531).

were the lavers. It had also an upper story to contain the cistern, and so probably also served as the head conduit of the abbey. Its diameter is stated to be 29 feet, but I have not yet been able to verify this. In date it seems to belong, like the later Durham example, to the beginning of the thirteenth century.

It only remains to express our best thanks to the Dean and Chapter of Durham for carrying out the excavations described in this paper; we also are much indebted to Mr. C. Hodgson Fowler, F.S.A., the cathedral surveyor, for the loan of the excellent plans, sections, and drawings of the remains discovered, which have also formed the basis of the accompanying illustrations. The photographs reproduced were taken from the cloister roof by Mr. J. R. Edis, of Durham.

APPENDIX.[a]

COMPOTUS DOMINI THOMÆ AYERE (REFECTORARII *in dorso*) SUPERVISORIS OPERIS CUJUSDAM NOVI LAVATORII MARMORIS IN CLAUSTRO DUNELMENSI DE RECEPTIS ET EXPENSIS ANNO DOMINI MILLESIMO CCCC^{0}XXX^{0}II^{0} ET III^{0}.

RECEPTA.

In primis idem respondet de xviij^{l}. vj^{s}. viij^{d}. receptis de conventualibus et quibusdam aliis per manus dominorum W. Partryke et W. Dalton, ut patet per capita huic cedulæ annexa.

Item idem respondet de v^{l}. vij^{d}. receptis de diversis officiariis infra et extra, ut patet in eadem cedula.

Summa omnium receptorum xxiij^{li}. vij^{s}. iii^{d}.

EXPENSÆ.

In primis idem computat in denariis solutis Thomæ Hyndley cementario pro lucracione petrarum marmorearum in querrura de Eglyston, ut patet per compotum suum ciij^{s}. x^{d}.

Item in denariis solutis eidem Thomæ pro tractacione extra querreram, pro scapulacione, et waynyng dictarum petrarum, ut patet in dicto compoto suo xlij^{s}. j^{d}.

Item in denariis solutis Abbati de Eglestona pro ferma querreræ prædictæ, per tempus predictum, xx^{s}.

Item in denariis solutis eidem Thomæ pro dolacione petrarum marmorearum, una cum solucione facta Roberto Nurry super factura unius logæ in cimitario Dunelmensi pro dictis petris operandis, ut patet in dicto suo compoto, cx^{s}. iij^{d}.

Item eidem Thomæ, ex præcepto Prioris, iij^{s}. iiij^{d}.

Item eidem pro una corda empta ad opus prædictum, ij^{s}. vj^{d}.

[a] *Historiæ Dunelmensis Scriptores Tres.* Appendix No. CCCXLVI. p. ccccxliii. In the printed, as probably in the MS. version of this, the items run on, but they are here printed separately for greater convenience of reference.

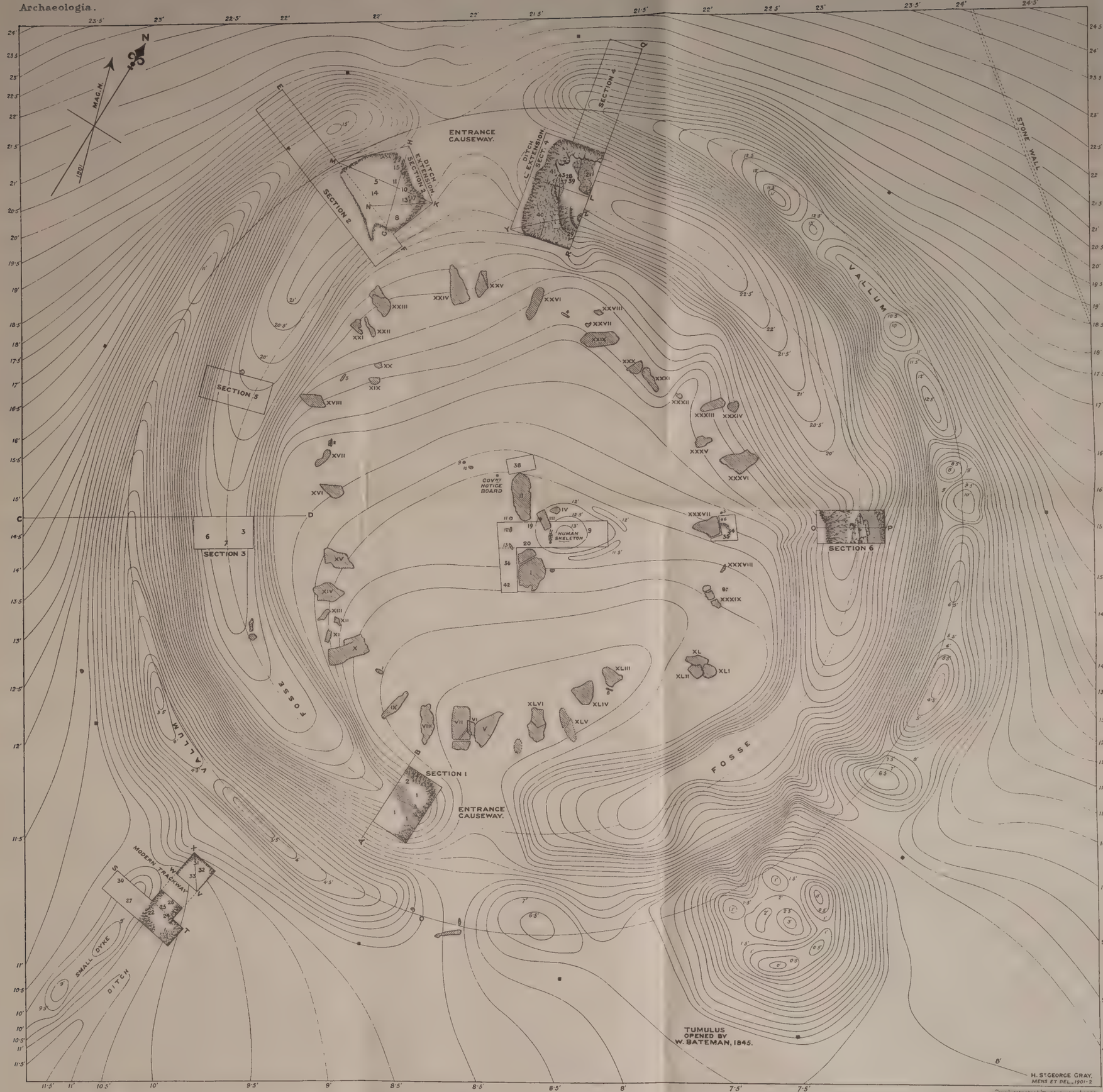
Item eidem Thomæ pro suo regardo ex convencione, xl^{s}.
Item Nicholao Wryght pro uno pare rotarum, x^{s}. iiij^{d}.
Item Ricardo fabro pro ferrura unius paris rotarum, iiij^{s}.
Item pro cariacione trium lapidum marmoreorum a prædicta querrera usque Dunelmum, xxviij^{s}. iiij^{d}.
Item Johanni Pykyryng cementario pro decem septimanis, capienti per septimanam, iij^{s}., xxx^{s}.
Item eidem Johanni pro tribus septimanis, capienti per septimanam, ij^{s}. vj^{d}., vij^{s}. [*sic*]
Item Johanni Fethyrstanhalgh pro quinque septimanis, capienti per septimanam, iij^{s}., xv^{s}.
Item eidem Johanni pro sex septimanis, capienti per septimanam, ij^{s}. vj^{d}., xv^{s}.
Item Johanni Tyndall pro una septimana, iii^{s}.
Item Johanni Knaythe pro una septimana, iij^{s}.
Item Johanni Pykyryng cementario pro opere suo per vices, xij^{d}.
Item Thomæ plumbario pro labore suo circa opus prædictum, x^{s}.
Item Laurencio latonerio de Novo Castro pro factura le spowtys, ix^{s}.
Item Willelmo sclater pro le blaunchyng per duos dies, viii^{d}.
Item Waltero Hurde pro opere suo ex curialitate, xij^{d}.
Item Thomæ Brake pro factura ij punchons cum sharpyng et layying, xvj^{d}.
Item in calabe empto, iij^{d}.
Item pro cariacione lapidum a querrera, xij^{d}.
Item Willielmo Mayn pro cariacione unius fodræ a Beurepayr, vj^{d}.
Item in uno quarterio calcis, viij^{d}.
Item in iij paribus cirothecarum datis diversis, iiij^{d}. ob.
Item in j fother luti, viij^{d}.
Item in sarracione tabularum pro le pentees in introitu, vj^{d}.
Item uno carpentario pro opere suo circa le pentees, xiiii^{d}. ob.
Item in clavis emptis ad dictum opus, vj^{d}.
Item Thomæ plumbario pro opere suo circa opus prædictum, xij^{d}.
Summa omnium expensarum xxiij^{l}. vij^{s}. iij^{d}. et sic æque.

Memorandum quod idem dominus Thomas Ayere sumptibus propriis fieri fecit aqueductum currentem in Cellarium.

Recepta de Lavacra.
Supprior vj^{s}. viij^{d}.
Johannes Durham, senior, iij^{s}. iiij^{d}.
Thomas Essh vj^{s}. viij^{d}.
Johannes Gysburn iij^{s}. iiij^{d}.
Johannes Fychborn vj^{s}. viij^{d}.
Willielmus Durham vj^{s}. viij^{d}.
Rogerus Langchestyr vj^{s}. viij^{d}.
Johannes Swnsyd vj^{s}. viij^{d}.
Thomas Morby vj^{s}. viij^{d}.
Henricus Feriby vj^{s}. viij^{d}.
Henricus Helay xx^{s}.
Johannes Gonerton vj^{s}. viij^{d}.
Johannes Durham, junior, vj^{s}. viij^{d}.
Ricardus Barton vj^{s}. viij^{d}.
Thomas Nesbet iij^{s}. iiij^{d}.
Johannes Durward iij^{s}. iiij^{d}.
Georgius [*ita*] iij^{s}. iiij^{d}.

Johannes Barlay vj^{s}. viij^{d}.
Willielmus Lyam vj^{s}. viij^{d}.
Thomas Ayre vj^{s}. viij^{d}.
Johannes Oll vj^{s}. viij^{d}.
Willielmus Partryke vj^{s}. viij^{d}.
Thomas Lawson iij^{s}. iiij^{d}.
Thomas Hexham iij^{s}. iiij^{d}.
Thomas Ward vj^{s}. viij^{d}
Robertus Areow vj^{s}. viij^{d}.
Thomas Furth vj^{s}. viij^{d}.
Johannes Byrtle iij^{s}. iiij^{d}.
Johannes Heworth iij^{s}. iiij^{d}.
Johannes Warnar iij^{s}. iiij^{d}.
Thomas Lwyn iij^{s} iiij^{d}.
Johannes Qweldporyge iij^{s}. iiij^{d}.
Robertus Scrimerston iij^{s}. iiij^{d}.
Willielmus Drax Prior de Koldyngham xl^{s}.
Willielmus Ebchestre Prior de Insula x^{s}.
Johannes Mody Prior Oxoniensis vj^{s}. viij^{d}.
Johannes Wycleff Prior de Stawmforth vj^{s}. viij^{d}.
Ricardus Hessewell xiij^{s}. iiij^{d}.
Thomas Pryston, in parte solucionis corrodij sui, iiij^{li}.
Johannes Fychborn xl^{s}.
Johannes Durham, junior, iij^{s}. iiij^{d}.
Elemosinarius, pro vino in ij ludis Prioris, viij^{s}.
Camerarius pro eisdem ludis viij^{s}.
Hostilarius pro vino in eisdem ludis x^{s}.
Sacrista pro vino in uno ludo iiij^{s}.
Comunarius pro vino in eodem ludo iiij^{s}.
Johannes Oll bursarius xv^{s}.
Willielmus Partryk vj^{s}. viij^{d}.
Willielmus Dalton vj^{s}. viij^{d}.
Johannes Gatsyd vj^{s}. viij^{d}.
In xviij petris plumbi venditis viij^{s}. iij^{d}.

The account is not summed up, but the total comes to £23 7s. 3d.



PLAN OF THE ARBOR LOW STONE CIRCLE, DERBYSHIRE.

Published by the Society of Antiquaries of London 1903

XXI.—*On the Excavations at Arbor Low*, 1901-1902. *By* H. St. George Gray, *Esq.*

Read 2nd April, 1903.

It is my privilege to bring before you the results of the recent exploration of the Arbor Low Stone Circle. These excavations, organized by the Anthropological Section of the British Association, and carried out in 1901 and 1902, were conducted with a view of ascertaining the age of Stone Circles, a beginning, possibly, of a series of such explorations. The Committee appointed to control this work consisted of Dr. J. G. Garson (Chairman), Mr. Henry Balfour (Secretary), Sir John Evans, Mr. C. H. Read, Professor R. Meldola, Mr. Arthur J. Evans, Dr. R. Munro, Professor Boyd Dawkins, and Mr. A. L. Lewis. The actual organization and direction of the work in the field was placed in my hands. The ground landlord, the Duke of Rutland, K.G., the First Commissioner of Works (in whose charge, under the Ancient Monuments Act, the Circle is placed), and the tenant,[a] readily gave their consent for the conducting of the exploration.

In relation to Stone Circles generally,[b] Arbor Low comes under the heading of those consisting at present of separate megaliths, which, whether single or multiple, are themselves enclosed by an independent vallum and fosse. Other examples are seen at Avebury, in Wilts; at Blisland, in Cornwall, where it has been recorded the fosse is 11 feet (3·35 m.) and the vallum 10 feet (3·05 m.) wide; at Stennis, in the Orkneys,[c] where the vallum is 3 feet (91 cm.) high; and at the neighbouring

[a] J. J. Warrilow, Green Croft Farm, Middleton.

[b] Arbor Low is, as a rule, considered to rank as the fourth circle in order of importance in England.

[c] Figured in Fergusson's *Rude Stone Monuments*, 242.

Ring of Brogar, where the ditch remains, but the wall, which may have been only a stockade, has disappeared.[a] The monument of Arbor Low is very similar in design to "Arthur's Round Table," in Cumberland,[b] excepting that the vallum of the latter is divided from the fosse by a berme. Arthur's Table, however, does not include any stones.

Arbor Low is situated at a distance from the beaten track of the tourist, in one of the most sparsely-inhabited districts of Derbyshire, in the parish of Bakewell, from which town it is barely 5 miles distant in a direct line, in a south-westerly direction. The nearest railway station, however, is Parsley Hay, only 1 mile to the north-west, on the Buxton and Ashbourne branch of the London and North Western Railway. Hartington is $2\frac{3}{4}$ miles to the south-west of Arbor Low, Youlgrave 3 miles to the east, Middleton $2\frac{1}{4}$ miles to the south-east, and Monyash 2 miles to the north. The monument, which is situated on a long ridge of hill, nearly 1,200 feet above the sea-level, commands a most extensive view towards Buxton and Bakewell, in northerly and easterly directions.

The operations extended over 14 working days, 8th—23rd August of 1901, and 10 days in May—June of 1902. The working plan (Plate XXXVIII.) was begun on the first day.[c] A square, 320 feet (98 metres) on each side, was formed round the vallum, enclosing an area of $2\frac{1}{3}$ acres, and the plan of the stones was begun to a scale of 240 to 1; in other words, 20 feet to an inch.[d] The exact position of each stone was taken by means of bearings and triangulation from fixed points, checked by cross-measurements. The plateau on which the megaliths lie averages 160 feet (49 metres) in diameter and is encompassed by a fosse. It will be seen that the figure formed by the ring of stones is pear-shaped, the bottom of the pear to the south-east, the stalk end to the north-west. It consists of rough unhewn slabs of mountain limestone, of which many of the largest average 10 feet (3·05 m.) in length by $4\frac{1}{2}$ feet (1·37 m.) in breadth: they are of variable thickness, extremely irregular in form, decayed, and somewhat fractured; with one exception (No. XVI.), and without considering No. VI., which is tilted up between Nos. V. and VII., and no doubt originally formed part of No. VII., all lie upon the ground,

[a] Fergusson's *Rude Stone Monuments*, 241-2.

[b] *Op. cit.* 128.

[c] Full particulars as to the construction of a relief model of Arbor Low, the result of these excavations, will be found in *Man*, for October, 1903 (published by the Anthropological Institute), where illustrations are given of it, at three different stages in its manufacture.

[d] The surveying instruments of the late General Pitt-Rivers were kindly lent by Mr. A. E. Pitt-Rivers, F.S.A.

many in an oblique position, all more or less recumbent. It will be noticed at the first glance at the plan that nearly all the stones lie more or less in the direction of radii of the circle. In giving numbers to the stones (Nos. I. to XLVI. on plan) they are simply numbered to facilitate reference and to distinguish one from another in speaking of them. Some of the very small stones and stumps have been numbered separately (Nos. 1 to 13). Fragments of stones in the ditch and near the southern causeway have not been numbered. The position and slope of the stones, individually, are extremely varied: the majority lie in shallow depressions, although some are quite on a level with the general turf line; others, again, are surrounded by slight mounds, the turf in many cases growing round and over the sides of the stones. The longest stone (No. II.), which measures 14·2 feet (4·32 m.) in length, is in the centre of the circle, whilst the widest (No. I.), 8·6 feet (2·59 m.) in width, is also in the centre.[a] The largest stone in the circle is No. X., the length of which is 13 feet (3·96 m.), and the width 6·2 feet (1·88 m.). As stated before, there is one exception to the stones being recumbent, and that is No. XVI. on the west side (see photograph, Plate XXXIX. fig. 2), which leans towards the north-east at about 35 degrees or 40 degrees with the surface of the surrounding turf; at its highest part it is $3\frac{1}{2}$ feet (1·07 m.) from the depression in which it stands.[b]

Dr. Pegge, writing in 1783,[c] says that "the stones formerly stood on end, two and two together, which is very particular." Glover, in his *History of the County of Derby* (1829), states that "Mr. J. Pilkington was informed that a very old man living in Middleton, remembered when a boy to have seen them standing obliquely upon one end;" tersely adding that "this secondary kind of evidence does not seem entitled to much credit." One of my excavators, an old man, assured me that he had seen five stones standing in his boyhood, and had sheltered under them! On inquiry, however, I ascertained that the man had a reputation for gross exaggeration. The Rev. S. Isaacson, writing in 1845, was of opinion that "these stones were never placed in an erect position." He says further that "the imported stones all appear to be resting on the native rock, the comparatively thin covering of soil having accumulated through the lapse of centuries." Gardner Wilkinson, on the other hand, in 1860, says "it is evident that they originally stood upright, as in other sacred circles." Lord Avebury, writing some twenty-four years ago, stated cautiously, "It is doubtful whether they were ever upright."[d]

[a] The central stone No. I. is seen in the photograph, Plate XXXIX. fig. 2; see also Fig. 3.

[b] Detailed particulars of the stones are given in Appendix III.

[c] *Archaeologia*, vii. 142.

[d] *The Reliquary*, xx. 81-85, with view and woodcuts.

As recently as 1899, Dr. Brushfield appeared to be of opinion that the stones originally stood upright; and Mr. A. L. Lewis is of the same opinion.[a]

The original number of the stones has been variously estimated, and Dr. Brushfield has summarised the opinions of previous writers in the volume for 1900 of the *Journal of the British Archæological Association*.

The published plans of Arbor Low are for the most part far from correct, Sir Gardner Wilkinson's plan, figured in two places, being the only exception.[b] In this small plan the position of the circle of stones is fairly correct, although there are several discrepancies in the proportional sizes of the stones. Pegge represents the megaliths as forming a true circle, and speaks of his plan as being "sufficiently accurate."[c] Glover includes what is styled "an engraving copied from an *accurate*[d] drawing by Mr. Mitchell."[e] It could not well be more inaccurate.

The area or plateau enclosed by the fosse presents an uneven surface, but the contours across this part of the plan have been delineated to follow the general slope of the ground, and not to mark, in this part, every little depression or slight elevation as it occurred. The contours of 6 inches vertical height show the shape of the monument and its immediate surroundings within the "square." The highest contour comes on the top of the tumulus on the south-east rampart; the lowest, at the north corner of the survey, a fall of $24\frac{1}{2}$ feet (7·47 m.) in the ground from top to lowest part. It is not unusual to take levels on fixed lines giving contours of 1 or 2 feet (30·5 or 61 cm.) vertical height and to fill in intermediate contours, if necessary, by the eye; but to ensure absolute precision, to show the little knolls and depressions on the vallum at the south-west, north, and east, to mark the irregularities made by Mr. T. Bateman on the summit of the tumulus,[f] to indicate the little dyke running in a southerly direction from the vallum, it was desirable that all the 6-inch contours should be surveyed severally, which entailed the necessity of taking some eighteen hundred levels.[g]

[a] *Man* (Anthropological Institute), September, 1903, No. 76.

[b] *Journal of the British Archæological Association*, xvi. plate 9; and Fergusson's *Rude Stone Monuments*, 140.

[c] *Archaeologia*, vii. 148.

[d] The italics are mine.

[e] Stephen Glover, *History of the County of Derby*, i. 275-6.

[f] See photograph, Plate XXXIX. fig. 2.

[g] Carefully contoured plans of ancient earthworks will be found to be of great importance to future explorers, for the contours will afford reliable evidence of the shape of earthworks when the plans were made, and will record any subsequent mutilations that may intervene.

The periphery of the crest of the rampart constitutes almost a true circle, with a diameter of exactly 250 feet (76·2 m.), as shown by the outer circle described on the plan. (Plate XXXVIII.) The centre of the circle comes near the middle of the south-west side of Stone No. III. of the central group. (See black spot on Stone III., plan, Plate XXXVIII.) The crest of the vallum deviates very slightly in any part from the true circle, excepting on the north-west, where it bulges out. The bottom of the fosse, as seen on the surface of the silting, declines from the line of the true circle far more than the rampart, as shown by the inner circle described on the plan, with a diameter of 190 feet (58 metres). The only segment of this circle that can be said to be true is on the south, south-west, and west. The ditch is thrown out far more than the rampart to the north and north-west, but it would not be expected to find that the fosse had silted up regularly and symmetrically all round; whereas the crest of the rampart, of course, is much about in the same position as it was at the age of construction.

The ditch is marked by a depression from the original surface all round averaging $5\frac{1}{2}$ feet (1·68 m.), and it is surprising that in the course of all these ages it should not have silted up to a greater extent.

The average height of the vallum above the general surrounding turf-level, as shown by the contours, is, on the outside, 7 feet (2·13 m.); its height above the central plateau, about 6 feet (1·83 m.). The average vertical height from the crest of the vallum to the surface of the silting of the fosse is 12 feet (3·65 m.). These dimensions have been much exaggerated by successive writers on Arbor Low. Pegge, however, in 1783, was perhaps the most correct, when speaking of the "circular rampire measuring by its inward slope, seven yards high, and by the outward five."[a] Subsequent writers have copied these dimensions, I fear, without personally checking them, and not bearing in mind that Dr. Pegge took his measurements of the height of the vallum on the slope, and not vertically. Succeeding accounts give these measurements on the slope as being vertical measurements, and as recently as 1900 the average height of the vallum has been recorded as 16 feet (4·88 m.) above the surrounding level.[b]

Judging from those portions of the fosse already re-excavated, the material obtained from the fosse when it was first excavated was not enough to complete the construction of the vallum. The confines of the vallum are bounded at various points by ten small governmental stones, indicated by small black squares

[a] *Archaeologia*, vii. 142.

[b] Dr. Brushfield on "Arbor Low," *Journal of the British Archæological Association*, N.S. vi. 129.

on the plan (Plate XXXVIII.). The continuation of the ditch and rampart is interrupted on the north-west and south-east by the entrance causeways, which are not in line with the central group of stones. The causeways are on the same general level as the area occupied by the megaliths and the surrounding land. The circumference of the rampart, including the entrances, is about 808 feet (246 metres.)

The vallum is joined on the south-west by a slightly raised bank about $1\frac{1}{2}$ foot (45·7 cm.) high, and an almost imperceptible "silted-up" ditch,[a] which run for some distance in a southerly direction, and about which there have been various theories. Some writers have connected this so-called "serpent" with Gib Hill, a tumulus at a distance of 1,043 feet (318 metres)[b] from the centre of Arbor Low (Plate XXXIX. fig. 1). Gib Hill was unsuccessfully dug into about 1812, and again by William Bateman in 1824,[c] when a few stone implements appear to have been found. In January, 1848, Thomas Bateman made a more thorough examination of the mound, when he discovered a cist, the top stone of which was only 18 inches (45·7 cm.) from the apex of the tumulus, containing a cremated interment in a small urn of Bronze Age type.[d]

On the south-east, adjoining the external face of the vallum and partly resting on it, a tumulus stands, the summit $7\frac{1}{2}$ feet above the surrounding turf-level (see photograph, Plate XXXIX. fig. 2). This barrow was first attacked in 1770 by the then occupier of the farm, without success. Likewise in 1782 by Major Rooke, assisted by John Manders, and in 1824 by William Bateman and Samuel Mitchell of Sheffield. A fourth attempt made in 1845[e] by Thomas Bateman and Rev. S. Isaacson resulted in the discovery of a limestone cist, which has been frequently described.[f] It contained calcined human bones, a bone pin,[g] pyrites and flint, and two small urns,[g] differing considerably in style and ornamentation, but undoubtedly of Bronze Age manufacture, and probably rather early in that

[a] It can be just seen on the left of the photograph (Plate XXXIX. fig. 1), running in the direction of the wall.

[b] According to my tape measurement.

[c] Bateman's *Vestiges of the Antiquities of Derbyshire*, 31.

[d] Bateman's *Ten Years' Digging*, 17-20.

[e] 23rd May and 16th June, 1845.

[f] "Arbor Low," by Sir John Lubbock, *The Reliquary*, xx. 81-85; Bateman's *Vestiges of the Antiquities of Derbyshire*, 64-66 and 74; and Winchester Volume of the British Archæological Association (1845), 197-204.

[g] Figured in Fergusson's *Rude Stone Monuments*, 141.

Fig. 1. General view of the southern and western part of Arbor Low, from the tumulus on the south-east vallum, looking westward.

Fig. 2. General view of the southern half of Arbor Low, taken from the crest of the vallum on the west.

period.[a] These urns are figured in the accompanying illustrations, Figs. 1 and 2.

Fig. 1. Urn found in cist of tumulus on the south-east vallum of Arbor Low. (Bateman Collection.)

Fig. 2. Earthenware pot found in cist of tumulus on the south-east vallum of Arbor Low. (Bateman Collection.)

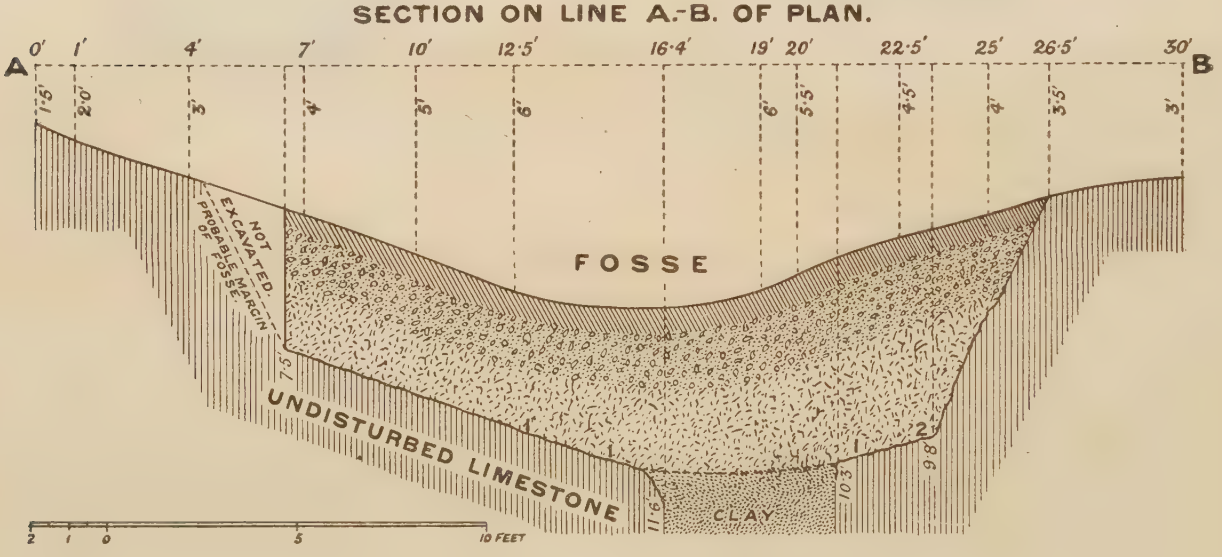
Fig. 1 was found filled with burnt bones. It is unusually wide and low: $4\frac{1}{2}$ inches high, 9 inches diameter at top, 4 inches diameter at base. The other pot, Fig. 2, found with it, is $4\frac{3}{4}$ inches high, $5\frac{1}{2}$ inches diameter at top, 3 inches at bottom. In June, 1845, the digging of this tumulus was resumed, but nothing further was discovered beyond a few pieces of deer-horn. Mr. Bateman never took the trouble to fill-in his excavation properly, the result being that four or five little knolls exist round the top of the tumulus, bounding a rather deep depression in the centre (see photograph, Plate XXXIX. fig. 2). In addition to this, he threw some of his débris into the ditch, clearly shown in the plan, Plate XXXVIII., and photograph, Plate XXXIX. fig. 1. The formation of this tumulus, which is probably of somewhat later date than the vallum, has caused a gap to occur in the vallum on either side of the mound. There is also another irregularity in the form of the rampart to the north of the tumulus, caused by a kind of spur which extends halfway across the fosse. All along the crest of the eastern and the north-eastern vallum are irregular depressions, sufficient material for filling which may be observed at intervals in ledges and patches along the base of the inner side of the east and north-east vallum, or, in other words, along the outer edge of the fosse in these parts. The only feasible explanation for this seems to be that Messrs.

[a] These relics are in the Sheffield Museum. The urns are here reproduced by kind permission of Mr. E. Howarth, the curator.

Bateman and Isaacson, elated by their success in finding the interment in the tumulus close to, pursued their investigations along the adjacent crest of the vallum at intervals, shovelling the material inwards down the slope of the rampart.

Excavations in the Fosse.

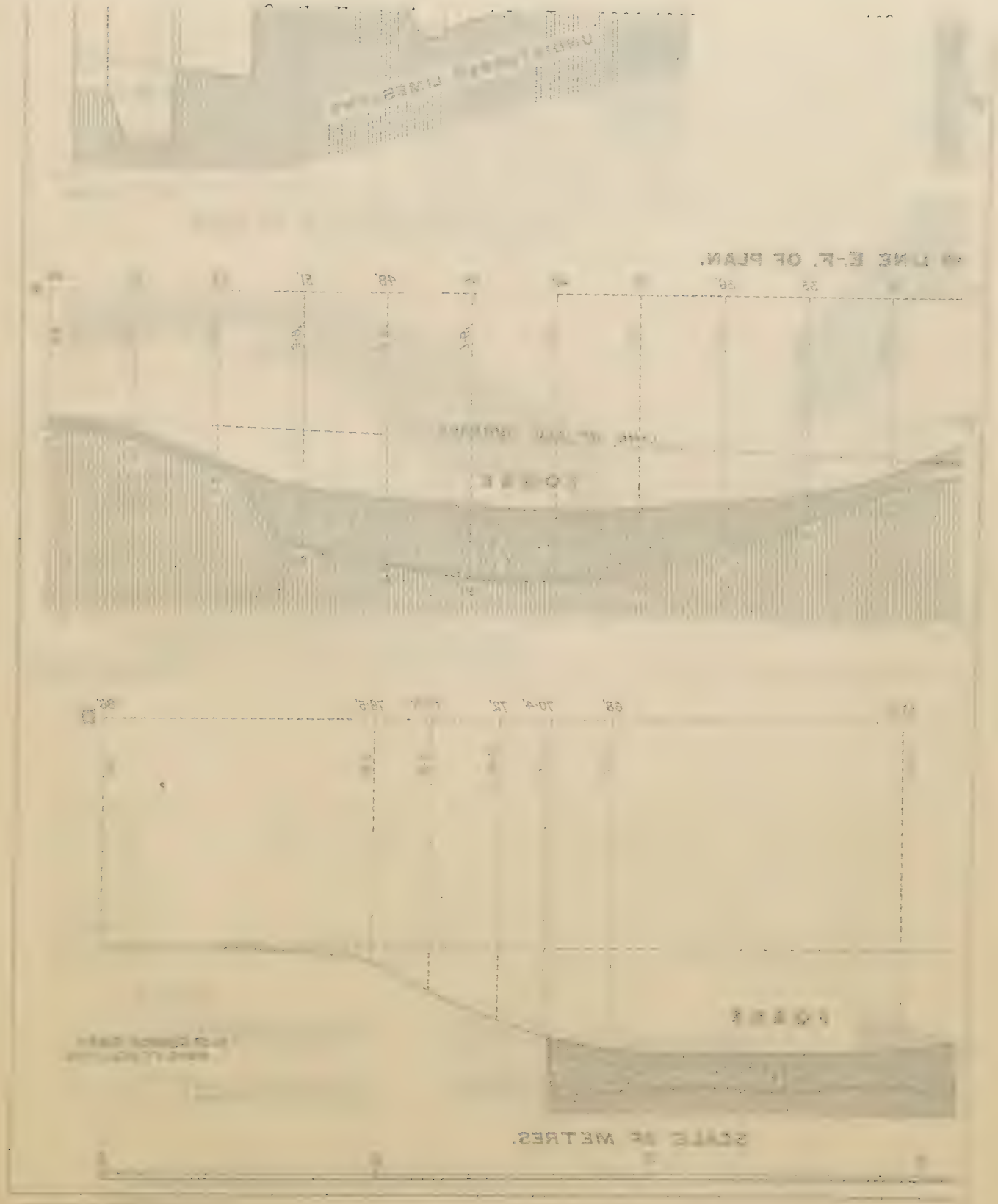
The excavations[a] were begun on 8th August, 1901, by making a cutting, called Section 1, through the ditch, 12 feet (3·66 m.) wide, close up to the south-south-east causeway. Roman remains were looked for under the turf, but without success. The only finds here were thirteen teeth of ox (" 1 " on plan and section),



For " References to Soils," see Sections, Plate XL. The larger figures represent the numbered " finds."

strewn on the limestone floor at the bottom, and at a depth of 5·4 feet (1·65 m.) pieces of red-deer's antler, one piece 15 inches long (38 cm.), found resting against the rock-side of the ditch on a solid vein of clay, running through the limestone floor (" 2 " on plan, Plate XXXVIII., and the accompanying section). It appears

[a] It appears to me advisable to register the names of the workmen employed during these excavations, as such a record might prove to be of some little importance in the event of a further examination of Arbor Low taking place during the first half of the present century: 1901 and 1902, Bennett Dawson, John Shimwell, and Frank Pursglove, of Middleton; and Charles Millington, of Monyash. 1901, Charles Brassington and Francis Fearn (boy), of Middleton; and John Evans, of Youlgrave. 1902, George Hayward and Fearn (brother of above), of Middleton; Charles Birds, of Youlgrave; and Caleb Millington and Solomon Bembridge, of Monyash.



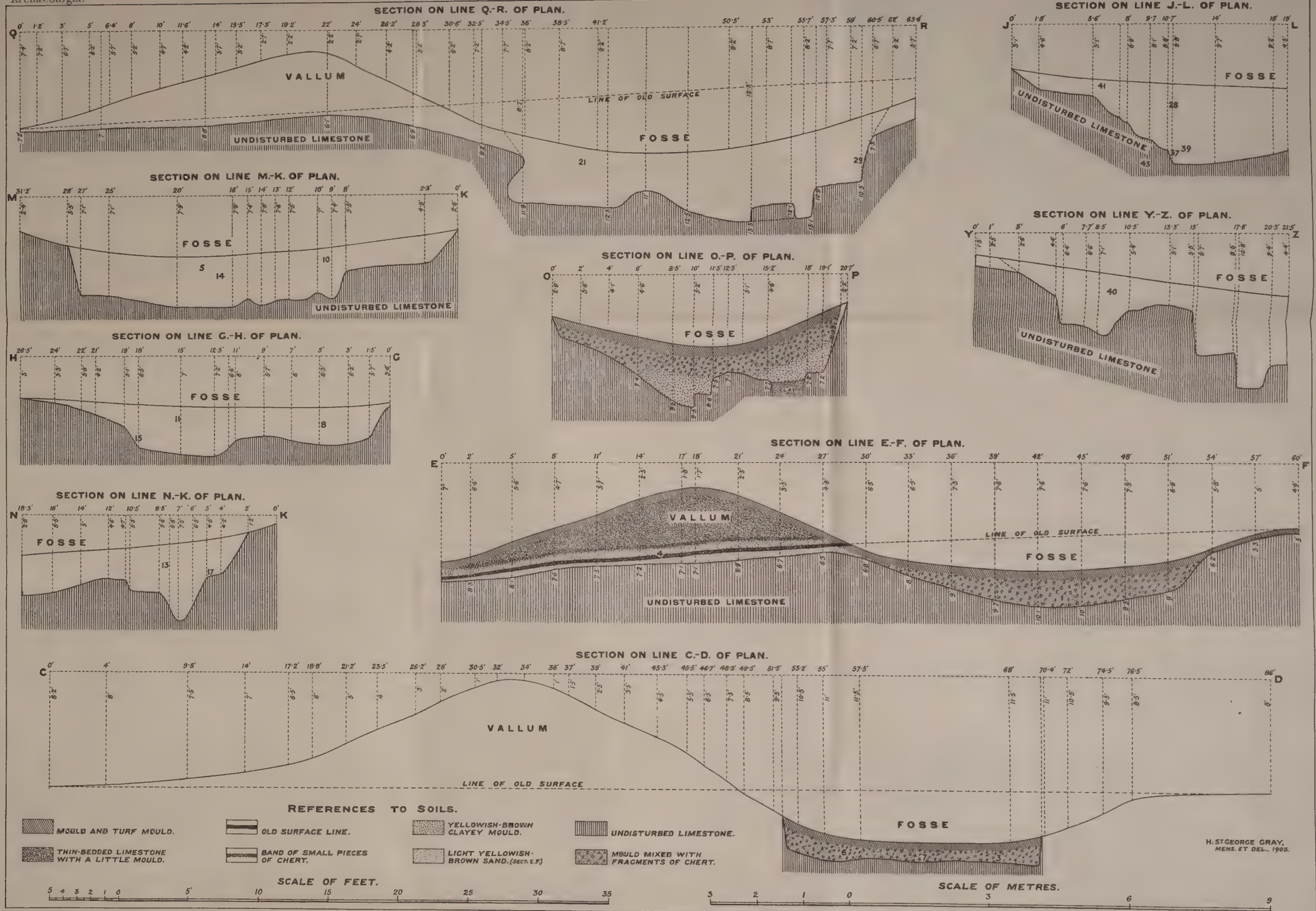


Photo Lithographed & Printed by James Akerman

ARBOR LOW STONE CIRCLE. — SECTIONS OF VALLUM AND FOSSE.

Published by the Society of Antiquaries of London, 1903

probable that these fragments may have been the remains of a kind of pick for loosening the previously fractured limestone at the time the ditch was first excavated, in the same manner as the antlers of the Stone Age in Grimes Graves described by Canon Greenwell.[a] A deer's horn pick, figured by Professor McKenny Hughes, was found at Horningsea in 1902.[b] Mr. W. Gowland, F.S.A., has recently figured a deer's horn pick found at Stonehenge, and many splinters of antlers of deer, one being embedded in a lump of chalk.[c] Such implements could not have been utilised for splitting limestone, but they would be useful in digging some of the looser material. Fifteen fragments of antlers of red-deer were found by General Pitt-Rivers at the bottom of the ditch of Wor Barrow, Handley Down, Dorset, amongst Stone Age relics.[d] Nothing else was found in Section 1. Its greatest depth was 5·4 feet (1·65 m.). The filling consisted of turf and turf-mould 6 inches (15 cm.); mould mixed with small pieces of chert, 18 inches (45·7 cm.), followed by a stiff clayey-mould to the bottom. The hard sides of the ditch and causeway were exposed.

Section 2, 10 feet (3·05 m.) wide, was next commenced on the north-western side at a distance of 16 feet (4·88 m.) to the west of the north-by-west causeway. (See section on line E-F, Plate XL.). The greatest depth of the ditch in this cutting was found to be only 2½ feet (76·2 cm.); and nothing being found here, the re-excavation of the ditch was continued[e] from this point in the direction of the causeway, the solid sides of which were found. As stone relics were fairly numerous here, and the bottom of the ditch was very irregular, surveys were made in various directions, and have been plotted to a scale of 60 to 1. The average depth of the ditch, the bottom of which was very uneven, was 3 feet (91·4 cm.) here, and the nature of the filling the same as in Section 1. This part was called "Ditch Extension, Section 2." (See sections on lines G-H, M-K, and N-K, Plate XL.)

Amongst the relics found here were six flakes[f] of black flint, of fine quality, weathered white to a considerable depth, mostly of exceptionally large size; they lay together, at a depth of 2·7 feet (82 cm.) from the surface, on a ledge on the solid side of the causeway (No. 17, Plan, Plate XXXVIII., and section on line N-K,

[a] *Journal of the Ethnological Society*, ii. 426.

[b] *Proceedings of the Cambridge Antiquarian Society*, x. plate ix. fig. 1.

[c] "Recent Excavations at Stonehenge," *Archaeologia*, lviii. 49, 72, and 86.

[d] *Excavations in Cranborne Chase*, iv. 133. See also vol. iii. 135.

[e] See photograph, Plate XLIII. fig. 2.

[f] Two of these flakes have since been found to join.

Plate XL.). These flakes must have been placed by hand on the ledge and forgotten, eventually becoming buried in the silting, or perhaps purposely concealed; they could not have come by accident into the position in which they were found. The flakes are of considerable size and weight. Though of irregular form, their edges are still sharp and undamaged. Mr. Balfour has suggested that they might possibly have been intended to be used as digging tools. They are figured in Plate XLIV, $\frac{3}{8}$ scale linear.

The following were also found in the Ditch Extension of Section 2, and are marked on the plan (Plate XXXVIII.) and sections (Plate XL.):

5. Small flint flake, with fine secondary chipping; depth, 0·7 foot (21 cm.). (Plate XLII. No. 5.)
8. Stone scraper, with bevelled edge, 36 mm. in width; depth, 1·2 foot (37 cm.). (Plate XLII. No. 8.)
10. Outside flake of flint, worked in two places; depth, 0·8 foot (24 cm.). (Plate XLII. No. 10).
11. Flint, chipped along the edge; depth, 0·8 foot (24 cm.).
13. Flint flake, with serrated edge; depth, 1·5 foot (45·7 cm.). (Plate XLII. No. 13.)
14. Small, narrow flint scraper, worked all round edges; depth, 1·4 foot (43 cm.) (Plate XLII. No. 14.)
15. Large flint scraper, of pale bluish-grey colour, with chipped bevelled semicircular edge and pointed end; plano-convex cross-section; depth, 2·3 feet (70 cm.), near the bottom of the ditch. (Plate XLII. No. 15.)

In this cutting a small oval-shaped hole in the limestone floor was found, filled with a stiff clayey mould, but no relics were discovered in it. The only animal remain here was a tooth of sheep, depth 0·7 foot (21 cm.).

Section 3, also 10 feet (3·05 m.) wide, was a cutting across the ditch, midway between Sections 1 and 2, on the west side. The silting was very soon removed in this case, the uneven limestone floor being found at a maximum depth of 1·9 feet (57 cm.). Three stone implements were found here, viz. Nos. 3, 6, and 7, plan (Plate XXXVIII.), section on line C-D (Plate XL.), and Plate XLII. Nos. 3, 6, and 7.

No. 3 is perhaps the most interesting and certainly the most unusual. It is difficult to give this rudely-chipped stone implement a definite name; it would

Fig. 1. View of the bottom and side of the re-excavated fosse, Section 4 (south east corner) showing the nature of the solid limestone walls.

Fig. 2. General view of the excavations into the vallum and fosse of Section 4 on the north of Arbor Low, and looking in a northerly direction.

serve very well as a scraping tool, and the point might have been intended for cutting grooves; or it might be a spear-head rejected in the process of manufacture. It has a plano-convex section; length 61 mm., greatest width 44 mm. No. 6 is a worked flake of black flint, with fine secondary chipping, which was found at a depth of 0·5 foot (15 cm.); No. 7, found at the same depth, is a chipped end-scraper of greyish flint, of a long narrow variety, with a notch on both sides.

Section 4 and its extension to the west to find the limestone sides and end of the ditch at the north-north-west causeway proved to be the most interesting and productive of the six ditch cuttings. (See photograph, Plate XLIII. fig. 1; and sections on lines J-L, Q-R, and Y-Z., Plate XL.) The first "find" was an almost circular greyish-white chert end-scraper, with edge of the usual semicircular form, at a depth of 1·4 foot (43 cm.) ("28" on plan and section, Plates XXXVIII. and XL., and Plate XLII. No. 28). One of the side edges exhibits some fine secondary chipping, and would serve admirably as a knife; the conchoidal fracture side is very smooth, and displays an extremely bold bulb of percussion, surrounding which some radiating "tearing" of the surface of the chert is well seen, the result of a single blow. The dorsal ridge running along this scraper is well marked, and is the result of a blow delivered above the divisional line of two adjoining and deep facets of the core from which the scraper was struck. At a depth of 3 feet (91 cm.) *close* to the limestone side of the ditch, at the south-east of the section, about two-thirds of an extremely thin and finely chipped flint arrow-head were found; its greatest width is 21 mm., greatest thickness 2·7 mm. Its position is shown in a photograph of the cutting (Plate XLI. fig. 1). The base of this delicate implement is bounded by a semicircular arch, whilst the side-edges in the perfect arrow-head, from the points of greatest width to the tip, appear to have been quite straight, thus representing the lozenge-shaped form as regards the upper half and the leaf-shaped variety in the lower half ("29" on plan and section, Plates XXXVIII. and XL., and Plate XLII. No. 29). This type belongs to the "kite-shaped class" of Mr. W. J. Knowles.[a] On the bottom of the fosse, at a depth of 5·7 feet (1·74 m.), under stiff clayey-mould, was found the most interesting relic that Arbor Low has yielded during these excavations, viz. ("43" on plan and section,[b] Plates XXXVIII. and XL.,

[a] Although belonging to this class, Mr. Knowles does not figure an arrow-head precisely similar. *Journal of the Anthropological Institute*, xxxiii. 44-56.

[b] "43" is shown at its relative depth from the surface of the silting in the sectional diagram on the line J-L, Plate XL., but being found at a depth of 5·7 feet it does not come within the walls of the ditch in section.

and Plate XLII. No. 43), a barbed and tanged chipped arrow-head, of greyish-white flint or chert, of extremely symmetrical form and 1 inch (25 mm.) long, a small portion only of the tip being deficient; greatest width, 21·5 mm.; greatest thickness, 5 mm. It is finely chipped all over its surface, including tangs and stem, which latter are bevelled on both faces from median ridges to edges. The end of the tang, which is very slightly longer than the barbs, is also bevelled. The section across the arrow-head is bi-convex, but it is considerably flatter on one face than on the other. The cutting-edges are slightly convex, owing to the fact that the barbs have an inward curve.

Not far from this beautiful arrow-head, at a depth of 4·8 feet (1·46 m.), a small rough chert scraper, with semicircular edge, was found (plan and section, Plates XXXVIII. and XL., and Plate XLII. No. 37); one edge is bevelled to a sharp, chipped, cutting-edge, and might have served well as a knife; the facets bear excellent examples of conchoidal fracture. In clayey-mould, close to, at a depth of 4·6 feet (1·40 m.), the greater part of a small horn of red-deer, with four tines, in an extremely friable condition, was discovered; indeed only a portion of one tine could be preserved ("39" on plan and section).

In the extension cutting to the west a greyish brown flint flake, with secondary chipping, was found at a depth of 1·2 foot (36·5 cm.), "40" on plan, section, and Plate XLII.; the bevelled edge on one side near the top is finely worked; the bulb of percussion is very prominent, and has on it a well-marked facet, known in scientific terminology as an *éraillure*.[a] At "41" (plan and section) a small chert flake was found, depth 12 cm. This completes the stone objects found in this part of the fosse. Of animal remains, a tooth of sheep was found at a depth of 3 feet (91 cm.), portion of a humerus of ox, at a depth of 5 feet (1·52 m.), and at various depths several small fragments of animal bones, too minute and friable for identification. Not to omit anything, it should be recorded that a Queen Victoria halfpenny, 1867, was found here near the causeway at a depth of 9 cm. below the surface of the turf. This is not surprising, as a coin trodden into the turf edgeways will gradually work its way downward a few inches during wet weather.

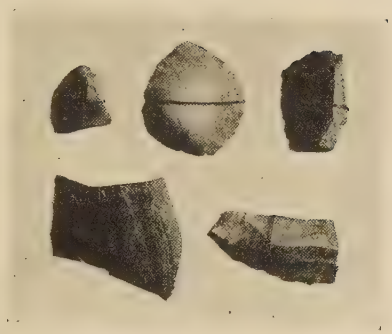
Section 5, 10 feet (3·05 m.) wide, is situated on the west between Sections 2 and 3 (plan, Plate XXXVIII.). Like Section 3, it proved to be very shallow, the limestone rock being reached in the middle of the silting at a depth of 1 foot (30 cm.) from the surface, whilst on the inner side of the ditch the depth was only

[a] "Worked Flints from the Cromer Forest Bed," by W. J. Lewis Abbott, F.G.S., *Natural Science*, x. 92-93.

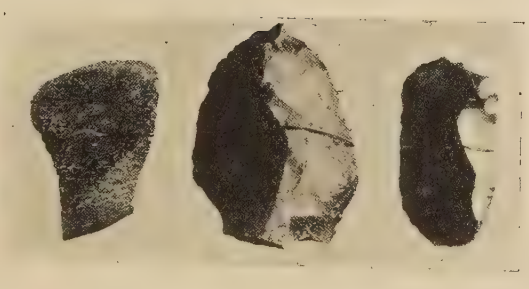
1901.

7 15 14

5 20 4



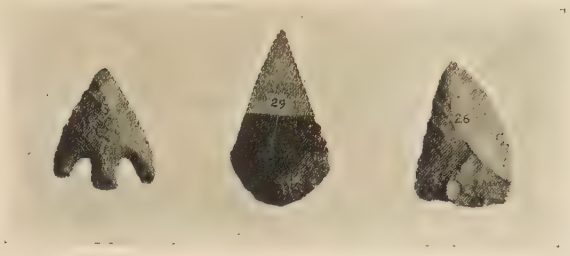
10 13



8 3 6

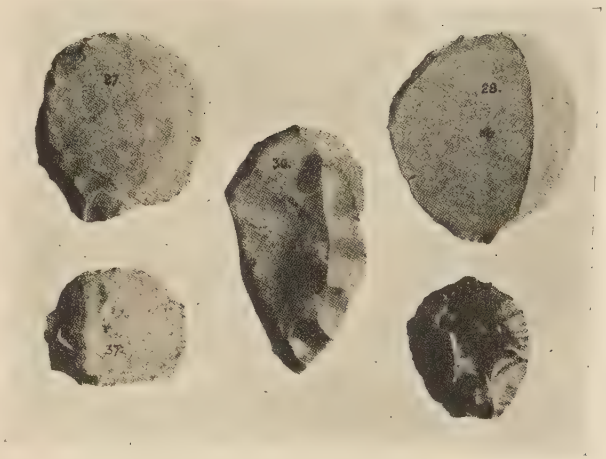
½ linear.

1902.

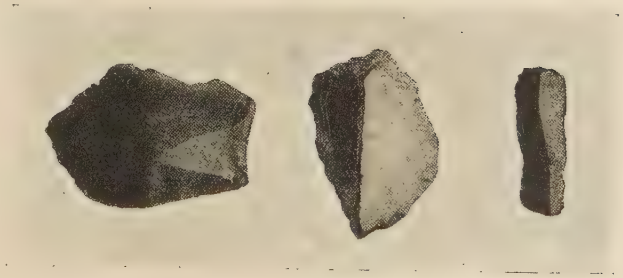


43 29 26

27 28



37 30 34



40 31 32

⅝ linear.

STONE IMPLEMENTS FOUND AT ARBOR LOW STONE CIRCLE IN 1901 AND 1902.

0·8 foot (24 cm.). The bottom was fairly level, especially when compared with the bottom of the fosse in all other parts except in Section 3. No relics were found in Section 5. The photograph, Plate XXXIX. fig. 2, taken from the north-west vallum, shows, in the foreground in the right-hand corner, the position of this section in its re-turfed condition at the close of the excavations.

On the east by north, another cutting, 10 feet (3·05 m.) wide, Section 6, was made across the fosse. In this part, the surface of the turf of the silting at the lowest part was 7 feet (2·13 m.) lower than the general level of the ground immediately adjacent to the central stones, as shown by the contours in the plan (Plate XXXVIII.). Here again nothing was discovered, with the exception of a few very small unidentifiable fragments of animal remains too small for identification and therefore not preserved. The average depth of the cutting below the surface of the silting was 4·3 feet (1·31 m.), and the maximum depth 5·8 feet (1·79 m.) in the north-west of the section. The block of limestone rises to a height of only 7 inches (18 cm.) below the surface of the silting. (See section on line O-P, Plate XL.) On the east and north-east the median block of limestone which ran across the section was divided from the limestone side of the ditch on the east by a vein of fine clay, yellowish-brown on the top and white below, which occurred at an average depth of 4 feet (1·22 m.) from the surface of the silting; the surface mould reached a depth of 2 feet (61 cm.), below which was the usual stiff clayey-mould thickly mixed with small pieces of chert; at the bottom the proportion of clay to mould increased, and the silting became more stiff and moist; in fact at the bottom it had to be cut out in solid lumps with a small spade, the chances of finding relics consequently being very remote.

Section 4 was the deepest portion of the ditch excavated, the maximum depth from the surface being 6·7 feet (2·04 m.). The bottom presented a very uneven surface; in fact, no attempt whatever appeared to have been made to obtain even a reasonably level track along the bottom of the fosse in the parts re-excavated. The same remark applies to the bottoms of all the other sections, with the exception perhaps of the shallow cuttings, Sections 3 and 5 on the west. The committee particularly desired that I should make observations on this point. Mr. S. Jackson recently found a flooring of poles at the bottom of a Bronze Age ditch at Fairsnape Farm, Bleasdale, near Garstang.[a] The bottom of a ditch cut in the chalk of a Bronze Age tumulus dug in 1898 at Whatcombe, near Blandford,

[a] See Professor Boyd Dawkins's paper on the subject, *Transactions of the Lancashire and Cheshire Antiquarian Society*, xviii. 114-124.

by the late and venerable Mr. J. C. Mansel-Pleydell, for over twenty-seven years president of the Dorset Field Club, was observed by Professor Boyd Dawkins to be "smoothed and polished into a perfectly well-defined track by human feet circling round the burial mound." This, he adds, "may have been intended for a ceremonial procession at stated times in honour of the dead."[a] Chalk of course lends itself admirably to being smoothed by constant contact with the feet, or even by means of such primitive tools as obtained in the Stone and early Bronze Ages; whereas, in the case of the fosse of Arbor Low, the process of levelling or smoothing the mountain limestone with its veins of chert, calcite, and other hard substances would have bristled with difficulties. Although General Pitt-Rivers never actually recorded the fact, I am able to testify that the bottoms of some of the ditches surrounding Stone and Bronze Age tumuli that he re-excavated in the chalk in Cranborne Chase were perfectly smooth. Take, for instance, the case of the great Wor Barrow on Handley Down, Dorset;[b] the bottom of the ditch was quite even and polished, especially on the western side, where the fosse was 13 feet (3·96 m.) deep, and some 21 feet (6·4 m.) in width at the top.[c]

But to return to the fosse of Arbor Low. From the western edge of Section 4, the excavation called "Ditch Extension, Section 4" was extended to the westward in search of the solid limestone causeway, the rock-sides of which shelved up very gradually, as shown in the photograph (left-hand side), Plate XLI. fig. 2. From the south-east corner of Section 4, and within $1\frac{1}{2}$ foot (45·7 cm.) from the surface, a "spur" of limestone extended in a north-west direction, sloping down gradually and meeting in the centre of the cutting, the limestone shelving up toward the middle of the causeway, on which long irregular ledges could be clearly traced which might well have served as steps, to facilitate the process of ingress and egress to and from the bottom of the ditch before it became filled, or partly filled, with silting. This is well shown in the section on line J-L of plan, Plate XL.

Considerable traces of fire were observed at the bottom of this cutting, especially in the south-east corner, indicated by a dark patch near the bottom of the photograph, Plate XLI. fig. 1. Dr. Garson has suggested that the traces of fire at this point may possibly indicate that this portion of the ditch, which is

[a] *Transactions of the Lancashire and Cheshire Antiquarian Society*, xviii. 122.

[b] *Excavations in Cranborne Chase*, iv. plate 253, fig. 1, and plate 249.

[c] These remarks on smooth-bottomed ditches are particularly made to remind future ditch-diggers of the desirability of making special observations on this point.

deep here, and therefore sheltered from winds, was occupied by persons employed in guarding the circle; hence the greater number of implements in this section and the corresponding section, No. 2, on the other side of the north-north-west causeway.

The completion of the excavation of the Ditch Extensions of Sections 2 and 4 enabled me to determine the minimum width of the northern causeway as 29 feet (8·84 m.). This causeway is partly shown on the left-hand side of the photograph, Plate XLIII. fig. 1. The southern causeway is well shown in Plate XXXIX. fig. 1.

On the north-west side of Section 4 through the fosse, miniature caverns occurred in the solid limestone sides of the ditch, as are well seen in the photograph, Plate XLI. fig. 2. Careful search was made here for any objects that might have been hidden at the time the ditch was open to the bottom; our efforts, however, were unrewarded.

This completed the examination of the fosse, 85 feet (26 metres) having been excavated in all, of the total length of 540 feet (165 metres). In other words, nearly one-sixth of the fosse has been re-excavated, flint implements only having been found from top to bottom of the silting. The *mean* depth of the whole fosse excavated is 3·9 feet (1·18 m.), and the average width at top 22 feet (6·7 m.).

As regards the arrow-heads, it is worthy of notice that the barbed and tanged specimen (Plate XLII. No. 43), a form generally considered to be the most highly developed, was found 2·7 feet (82 cm.) lower down in the silting than the arrow-head of leaf-shaped form, but approximating closely to the lozenge-shaped, a form which is generally regarded as an earlier form than the barbed variety (Plate XLII. No. 29). As previously stated, this type falls within the "kite-shaped class"[a] of Mr. W. J. Knowles. It has not, however, yet been clearly ascertained which form of arrow-head was first manufactured, and the matter is at present surrounded with some difficulty, inasmuch as the triangular, stemmed, and leaf-shaped varieties have been placed on record as being found together in the same locality and the same deposits. One form is easily evolved from another, and although General Pitt-Rivers' method[b] of arranging arrow-heads, showing the theoretical transition from one form to another, is excellent in museum arrange-

[a] For brevity I purpose to use this term to the end of the paper.

[b] Colonel A. Lane Fox's second lecture on "Primitive Warfare," *Journal of the Royal United Service Institution*, 1868, xii. No. LI.

ment until something more definite is arrived at, yet, bearing in mind the records of the circumstances of the finding of flint arrow-heads during the last thirty-five years, it would be, as Sir John Evans has said long ago, "unwarrantable to attempt any chronological arrangement founded upon mere form, as there is little doubt of the whole of these varieties having been in use in one and the same district at the same time, the shape being to some extent adapted to the flake of flint from which the arrow-heads were made, and to some extent to the purposes which the arrows were to serve."[a]

The two Arbor Low specimens were probably not used a great many years apart, for the fosse would, throughout its lower portions, and indeed within a foot or two of the present surface of the silting, fill up somewhat rapidly, particularly at the bottom, owing to the fact of the sides of the ditch being exposed to the erosive action of the weather, and the consequent disintegration of the sides. In this way it will be readily understood that the width of the Arbor Low fosse, and indeed of all such ditches, has increased at the top during the process of silting-up and denudation of the sides, whilst the width of the ditch at the bottom would remain very much the same as at the time of original construction. Naturally the sides of some ditches would disintegrate much more quickly than others; the havoc played by frost and rain would leave its mark much more rapidly in the case of the chalk than in that of the limestone, and thus the talus formed at the bottom of the ditch would present a very pronounced concave surface, so that when the sides of the ditch become covered up nearly to the top, the thickness of the talus in the middle of the ditch would not necessarily be more than, say, a couple of feet deep in the case of a fosse of the size of that at Arbor Low. After the whole of the sides became completely sheltered in this way the filling-up to the present surface of the central parts of the ditch from natural causes would be the accumulation of centuries of finer material and stone washed in and blown in from the surrounding country. Until grass began to grow on the vallum a more or less large proportion of the silting would be derived from the slipping and washing down of material from the higher ground. Finally, when grass had begun to grow in the fosse, the silting would almost cease and the surface mould would gradually increase in thickness as vegetable matter decayed. This mould would probably form in an increasing ratio owing to the greater luxuriance of the grass caused by the greater depth of mould and the greater moisture in the centre of the ditch. It appears certain that these ancient ditches,

[a] *Ancient Stone Implements of Great Britain* (1872), 330; 2nd edit. 370.

Fig. 1. View of the re-excavated fosse, Section 4, close to the northern Causeway, and the cutting through the vallum in process of excavation on the second day.

Fig. 2. View of Section 2 through the vallum and fosse on the north-west, looking in a northerly direction.

as I have endeavoured to show, must have silted up (excepting the surface mould of course), in a constantly and greatly diminishing rate.

Now the relative depths of these two Arbor Low arrow-heads do not appear to differ very greatly when the formation of the talus is taken into consideration. The barbed arrow-head being on the bottom of the ditch and near the middle would become covered almost immediately the fosse was allowed to silt up. The other arrow-head being found within an inch or two of the side of the ditch at a depth of 3 feet, it is obvious that it would be deposited on the talus and become covered very soon after the barbed arrow-head. As before mentioned, the broken kite-shaped arrow-head was picked up out of the silting so very near the actual wall of the fosse that it is just possible it may have rested on a small ledge of the lime-stone rock, being removed therefrom by the pickaxe on the day of discovery. In any case it may, I think, be safely asserted that these arrow-heads were in use at about the same period, suggesting that these forms were probably contemporaneous in this district. Under these circumstances, this kite-shaped arrow-head might be regarded as a development of the typical leaf- and lozenge-shaped forms, made about the same time as the barbed and tanged specimen, which latter, as a type, is considered to be a late development in the art of the manufacture of the stone arrow-head; although stems are known to have been developed in the Palæolithic Age.[a]

Excavations through the Vallum.

In continuation of Section 2 across the fosse a cutting, 10 feet (3·05 m.) wide, was made through the vallum. This point was chosen as the vallum was rather low here and consequently would not entail so much labour. No relics were found in this cutting, except a doubtfully-artificial stone scraper picked up on the old surface line ("4" on plan, section, and Plate XLII.).[b] The absence of relics in this section was very disappointing.[c] The cutting, however, was of value in

[a] *Journal of the Anthropological Institute*, xxxiii. 52, 54.

[b] The surface of chert does not seem to alter as flint does from exposure and age; consequently it is often difficult, if not impossible, to decide whether certain fractures are ancient or quite recent.

[c] General Pitt-Rivers once cut four sections, 10 feet wide, through the rampart and ditch of a Bronze Age encampment without finding a relic worth mentioning; but he did not despair, and forthwith commenced to dig away the rampart and ditch all round, being rewarded by finding bronze implements and much pottery.

showing the material out of which the vallum was constructed. (See photograph of the cutting, Plate XLIII. fig. 2.) Measuring from the crest of the rampart downwards, the soils, etc. occurred as follows: (1) turf and turf-mould, 0·5 foot (15 cm.); (2) rough pieces of thin-bedded limestone mixed with a little mould, 3·3 feet (98 cm.); (3) band of small pieces of chert with a little mould, 0·3 foot (9 cm.); (4) yellowish-brown clayey mould, 0·5 foot (15 cm.); (5) "old surface line" of dark brown mould, 0·3 foot (9 cm.); (6) light yellowish-brown sand. (See section on line E-F, Plate XL.)

Like Section 2 of 1901, the section through the vallum in continuation of Section 4 yielded no relics, but proved of interest, inasmuch as it was largely composed of huge boulders of limestone, maximum length 4 feet (1·22 m.), as shown in the photographs, Plate XLI. fig. 2, and Plate XLIII. fig. 1. No doubt these boulders had been loosened in the formation of the fosse and utilised for the construction of the vallum. The crest of the rampart here is about 4·7 feet (1·43 m.) above the "old surface line" immediately below it. (See section on line Q-R, Plate XL.) Chert and calcite occurred in bands in the limestone strata in large quantities here, and fluor-spar was detected by Professor Boyd Dawkins.[a] The position of this cutting is shown in the photograph (Fig. 3).

Trenching near the Stones.

These excavations were made with a view of ascertaining whether holes existed in the limestone floor in which Stones I., II., III., and XXXVII. originally stood, but the results could hardly be considered conclusive.[b] As stated before, the various writers on Arbor Low disagree as to whether the stones originally stood in an upright position, or whether they always laid flat on the ground.

A hole, 7 by 4½ feet (2·13 m. by 1·37 m.), was made to the east of, and close

[a] Professor Boyd Dawkins visited the excavations on 2nd June, 1902; Mr. Henry Balfour, President of the Anthropological Institute, was the whole of the same day at Arbor Low, and part of the next; also on 16th August, 1901. Mr. Chas. Lynam, F.S.A., visited the excavations on two days in 1901; Dr. Garson on 22nd August, 1901, and Mr. A. L. Lewis on 9th August, 1901. On 4th June, 1902, four members of the Derbyshire Archæological Society visited the diggings, including Mr. H. A. Hubbersty, Mr. W. R. Bryden, and Mr. W. J. Andrew, F.S.A.

[b] More time could not be bestowed on this particular investigation.

to, Stone XXXVII.[a] There was a well-marked depression in the turf here, and the stone has a flat squared surface at this end. Just below the turf, depth 0·3 foot (9cm.), a small fragment of Romano-British pottery was found (Plan "35"), and a small discoidal flint scraper, 31 by 26·5 mm. and 7·7 mm. at its thickest part, yellowish-brown and translucent, was found in mould at a depth of 0·6 foot (18 cm.) ("34" on plan, Plate XXXVIII., and Plate XLII., No. 34.) It is worked all round the edges and on both faces, and in addition all over the bulb of percussion. A hole in the limestone floor certainly existed close to the north-east of the stone, of more or less oblong form, length 5·8 feet (1·79 m.), maximum depth below surface 2·1 feet (64 cm.); it, however, appeared to me to be merely one of the usual natural shallow depressions in the limestone, and the

Fig. 3. View of Arbor Low taken from the summit of the tumulus on the south-east vallum, looking in a north-westerly direction.

excavation afforded no evidence of a hole having been cut for the reception of the base of a standing stone. Another hole 8 by $4\frac{1}{2}$ feet (2·44 m. by 1·37 m.) was made at the north-west end of Stone II. No evidence as regards the original position of this stone, if it ever stood upright, was adduced from this digging, and nothing was discovered but a flint flake (Plan "38"), depth 0·5 foot (15 cm.).[b]

[a] This is the stone on which a drawing-board rests on the right of the photograph, Fig. 3. The depression is seen on the shadow side of the stone.

[b] The man stooping down in a hole in the photograph, Fig. 3, indicates the position of this excavation.

The south-west edge of Stone I. in the centre being bordered by a marked trench, an excavation 13 by 5 feet (4 m. by 1·52 m.) was made.[a] Digging had evidently taken place here in recent times, probably by Messrs. Bateman and Isaacson in 1845, when they explored the tumulus on the south-east vallum. The rock was reached at a maximum depth of 61 cm. below the highest part of the turf, and a minimum depth of 30 cm. Early Victorian shards were found, and a clay tobacco pipe bowl, nineteenth century; also a flint flake, depth 9 cm. (Plan "36"), and a fragment of pottery, apparently of Romano-British quality ("42" on plan), depth 40 cm.

A larger piece of trenching, 35 by 7 feet (10·67 m. by 2·13 m.), was dug in 1901, between Stones I. and II., and to the east of them in the direction of Stone XXXVII. To the west a stump (No. 13) was found just under the turf standing in a leaning position towards the north-east.[b] Between these stones, at a depth of 0·5 foot (15 cm.), another fragment of Romano-British pottery[c] was found ("19" on plan), and at a depth of 0·9 foot (27 cm.) a small chipped flint implement ("20" on plan), length 33 mm., width 28 mm., resembling a broad leaf-shaped arrow-head in form, flaked on both sides; but it may have been hafted and used perhaps as a knife, as the point is extremely obtuse, and therefore not well adapted for penetration. It is figured in Plate XLII. No. 20.

No holes for the reception of the bases of the monoliths were found between these stones; in fact, the undisturbed ground in this part was struck at about 1·7 foot (52 cm.) from the surface. The present evidence afforded by the digging of these holes seems hardly sufficient to warrant the assertion that the builders of the stone circle did not cut holes in the limestone for the reception of the stones, that is, supposing they originally stood upright.

To the east of Stones III. and IV. there were signs on the surface of this part having been excavated before. The rock was reached here at very variable depths, and at the extreme east of this trenching an excavation, 7·9 feet (2·43 m.) deep, was made before the undisturbed ground was reached. The hole was filled with rich mould mixed with a little chert. No relics were found except a fragment of human ulna ("9" on plan), depth 0·5 foot (15 cm.). It is possible that a skeleton or skeletons may have been removed from here, and that this ulna was lost in the filling-in. If this part had been excavated before, there were no signs

[a] The man standing up filling in this excavation on the left side of the photograph, Fig. 3, indicates the position of this hole.

[b] This was left *in situ* at the completion of the excavations.

[c] It consisted of a fragment of rim, grey on the outside and brick-red on the inside.

$\frac{1}{3}$ linear.

No. 17

SKULL AND FLINT FLAKES FOUND AT ARBOR LOW.

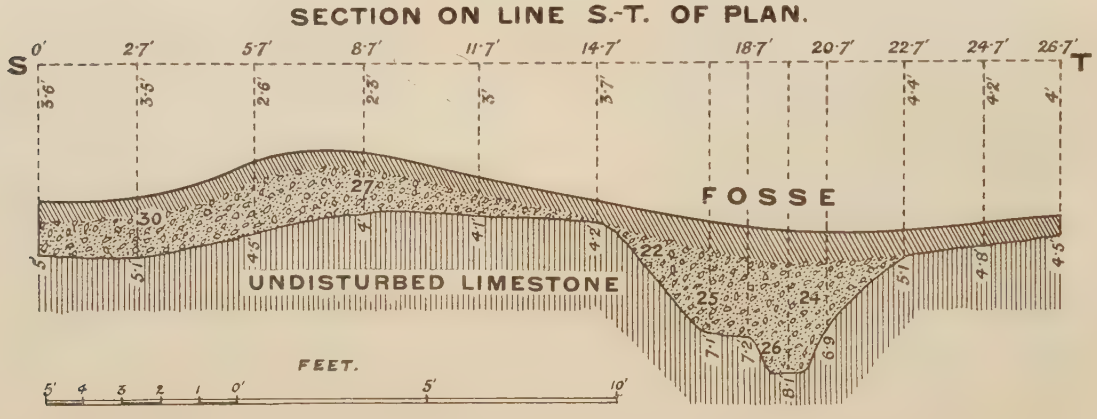
of the ground having been disturbed to the west of the small Stone No. IV. Here, close to Stone III., a human skeleton was discovered (see plan); the middle of the body (a fully adult male) was situated 6·5 feet (1·98 m.) to the south-east of the centre of the circle.[a] It was discovered on 16th August, 1901, but as Mr. Balfour was expected to be present on the following day, the men were directed to cover it up for the night. Next morning the skeleton was uncovered and cleared in order that it might be photographed *in situ*. It proved to be an extended interment, the skull being only 1·2 foot (37 cm.) from the surface. The skull, which was much crushed and weathered, was found on removal to be in forty or fifty pieces; some of the facial portions and sides had unfortunately decayed, and the lower jaw was not present. The skull is represented in its restored condition, $\frac{1}{3}$ linear in Plate XLIV.; three views, viz. *norma lateralis*, *norma facialis*, and *norma verticalis*. Parts of the skeleton were missing altogether, including the tibiæ, the fibulæ, the condyles of the femora, one patella, the feet and hands. The end of the left femur came close to the south-east corner of Stone III. The skeleton, which was buried in pure mould, lay on his back, with the face turned slightly to north-east, and was surrounded by large blocks of stone built up on the south, west, and north sides to within a few inches of the surface; the ends of all the bones were much decayed; the head was to the south-south-east; the bearing along vertebral column $164\frac{1}{2}$ degrees south; the length from the top of skull to the lower end of the femora was 3·9 feet (1·19 m.). No relics were found with the skeleton.

The approximate length of the left femur is about 453 mm., which gives a stature (by Rollet's method) of 5 feet 5 inches (1·65 m.). The skull has been restored as far as possible (Plate XLIV.), and turns out to be mesaticephalic, or medium-headed, with a cephalic index of about 78·0. At the Glasgow meeting of the British Association, Dr. Garson read a detailed report on this skull, concluding by saying that "the osteological characters show that the individual was not of the type found in interments of the Neolithic period, neither do they point to his being of the Bronze Age type, though he was more nearly allied to it than to the former. On the other hand, there are no characters about the specimen which would preclude its being much more recent. The extended position in which the body had been laid decidedly supports the view of the interment being of more recent date than the Bronze period, to which I consider the weight of the evidence afforded by the osteological characters also points."

[a] The centre of the circle is marked on the plan by a large spot on Stone III.

Excavations in the Small Dyke connected with the Vallum of Arbor Low on the South-west. (See Plan, Plate XXXVIII. and Sections.)

The primary idea of excavating here was to ascertain whether the ditch of this small dyke continued under the rampart of Arbor Low itself, and if possible to prove its age by means of any relics that might be found. The ditch on the surface is marked only by a very slight depression, and the bank at the present day averages only 1·5 foot (45·7 cm.) above the level of the surrounding field. Doubtless the bank was higher at the time of construction, but denudation has



For "References to Soils," see Sections, Plate XL. The larger figures represent the numbered "finds."

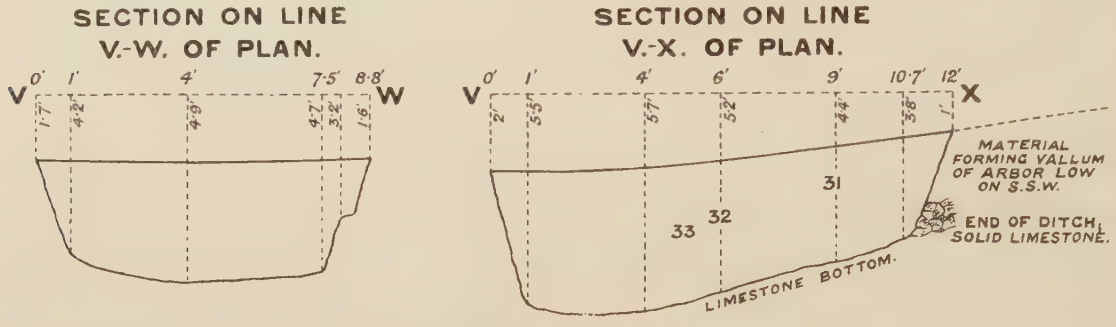
intervened, and loss by material gradually sliding down, thus assisting in the formation of the silting of the ditch. A section, 7 feet (2·13m.) wide, was first made through the bank and ditch at a point 170 feet (51·82 m.) from the centre of Arbor Low, and within the area of the plan. The finds in the ditch here were: a small worked flake of yellowish-brown colour and translucent, depth 1·2 foot (37 cm.), "22" on plan, Plate XXXVIII., and the accompanying section; and a flint flake, depth 1·8 foot (55 cm.), "24" on plan and section. The bank yielded: At "27" on plan and section, depth 0·9 foot (27 cm.), on the level of the "old surface line," a well-formed greyish-white chert (or flint) end-scraper, maximum length 42 mm., width 36 mm., thickness 8 mm.; both faces are almost flat, and the bevelled edge of horse-shoe form is finely chipped, exhibiting signs of considerable use. It is figured in Plate XLII. No. 27. At "30" on plan (Plate

XXXVIII.), and section, depth 0·7 foot (21 cm.), a greyish flint scraper, an end- and side-scraper combined; length 53 mm., width 30 mm., thickness at chipped and bevelled edge, 8 mm.; at the "bulb" end the implement has been finely worked to a point. This end and side were probably used for cutting purposes; the whole implement, and especially the finely-chipped semicircular scraping-end, is very smooth and worn, indicating prolonged use. It is figured in Plate XLII. No. 30. These implements (Nos. 27 and 30) are undoubtedly of the date of the construction of the dyke.

No further excavation of the bank was made, but the exploration of the ditch was extended for 4·5 feet (1·37 m.) to the north, and produced the following stone objects: At "25" on plan and section, a long greyish-white chert flake, with rough and irregular serrations along both edges, depth 2 feet (61 cm.); the oblique top does not appear to have been worked; the bulb of percussion displays a large and well-marked *éraillure*. At "26" on plan and section, at a depth of 3·2 feet (98 cm.) close to the bottom of the ditch, a small white flint knife, finely-chipped and of somewhat triangular form, length 30 mm., width 20·5 mm., greatest thickness 7 mm., was discovered. It is of an uncommon form, and at first sight would probably be included in the category of arrow-heads; it is, however, apparently a finished implement, being chipped all round the edges; the edge at the base shows signs of crushing or bruising; one of the side-edges is straight and neatly chipped, whereas the other is convex with a finely-worked bevelled cutting-edge with signs of crushing near the base. On the other face the concave edge has been considerably worked; the bulb of percussion has also been chipped, leaving part of the *éraillure* facet visible. This is the most important relic found outside the vallum of Arbor Low during these explorations; it is figured in Plate XLII. No. 26. Two flakes were also found here both at a depth of 2 feet (61 cm.): one is merely a long, narrow, outside flake; the other a flint flake with edges slightly serrated.

At this point the little bank had been levelled down, probably for a modern track, recommencing and almost immediately terminating in the vallum of Arbor Low. Here another small excavation, 8 feet (2·44 m.) wide, was made into the ditch to determine whether it ended here or continued in a northerly direction under the vallum of Arbor Low. The ditch, however, shelved up gradually, and the rock-end was found (as shown in the annexed section on line V-X of plan), thus proving that this little earthwork is of the same period of construction as Arbor Low or later; but judging from the relics discovered, it would appear to be of about the same date as the larger monument. In this latter excavation a

calcined chert scraper was found, 0·9 foot (27 cm.) deep ("31" on plan, section, and Plate XLII.). This implement, which was formed from an outside flake, has a pronounced and straight dorsal ridge, the section across the scraper being



triangular. At "32" on plan and section (No. 32, Plate XLII.), a small, elongated, narrow black chert end-scraper, worked on both sides, was found, depth 1·6 foot (49 cm.); and at "33" a black chert flake, depth 1·8 foot (55 cm.).

The average depth of this little ditch beneath the surface was 3 feet (91 cm.); the width at top, 8 feet (2·44 m.).

Summary.

During the four weeks that the excavations were in progress, no metals were discovered, nor any traces of fictile ware that could be assigned to the date of the construction of Arbor Low. Six sections were cut through the fosse, 85 feet (26 metres) of fosse in all; two cuttings were made through the vallum; four patches of trenching of varying dimensions were dug in the interior; and of the small dyke to the south-south-west, 7 feet (2·13 m.) of rampart and 19½ feet (5·94 m.) of ditch were examined. The number of relics found has certainly been disappointing, and yet, on the other hand, Arbor Low, not having been a habitation, and from negative evidence appearing not to have been a place of sepulture at a period closely following its construction, I do not know that more relics could be expected under the circumstances. Nothing Roman has been found, except three small fragments of what appears to be Romano-British pottery just below the turf in the interior. Whilst speaking of this period, the following extract might be introduced: Dr. Cox wrote in 1884, "I have been myself convinced, after the closest and most unprejudiced study, that the date of Arbor Low is subsequent to

the Roman occupation of Britain, and that it was erected as a trophy of victory on a spot where a commander fell, or where the crisis of a battle was decided."

As is well known, flint scrapers are frequently found during successive ages down to and including Roman times, but here they are found deep in the silting of the fosse, only in association with other rude stone implements and chipped flint arrow-heads of Neolithic form, but of a variety found also in later periods. By the way, a flint arrow-head was found with Late-Celtic remains in the Glastonbury Lake village, but of course there is no proof that it was made during that period. The majority of the implements found at Arbor Low appear to be of chert, which is only what would be expected, seeing that it is indigenous and an excellent substitute for flint, whereas flint was brought probably from some considerable distance.

Sir John Evans, in *Ancient Stone Implements*, states that Mr. J. F. Lucas had a roughly-chipped celt, 4 inches (10 cm.) long, from Arbor Low, but no record of

Fig. 4. Circular flint knife found at Arbor Low (Lucas Collection, British Museum). ½ linear.

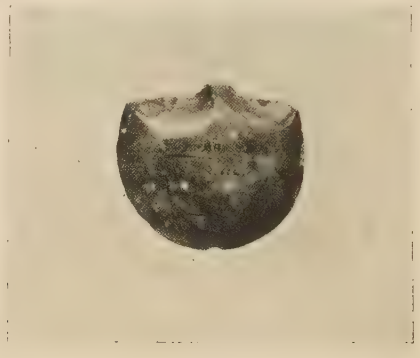


Fig. 5. Circular flint knife found at Arbor Low (Lucas Collection, British Museum). ½ linear.

its actual finding appears to have been preserved.[a] Sir John also mentions the finding of a rare form of circular knife[b] at Arbor Low in 1867, Fig. 4, formerly in Mr. Lucas' collection; and in addition he figures a finely-chipped flint knife, or knife-dagger,[c] Fig. 6, nearly 6 inches (15 cm.) long, found at Arbor Low in June, 1865 (Lucas Collection). Jewitt has engraved the same implement full size,[d] and this

[a] *Ancient Stone Implements*, 2nd edit. 72.

[b] *Op. cit.* 343.

[c] *Op. cit.* 352, fig. 267.

[d] *Grave Mounds*, fig. 155.

and the circular knife, Fig. 4, as well as the smaller knife of the same kind, Fig. 5, 4·7 cm. in diameter, are now[a] in the British Museum.[b] Unfortunately, there appear to be no records of the discovery of these implements, and as their *gisement* is unknown, they assist very slightly in the determination of the actual period of the erection of Arbor Low.[c]

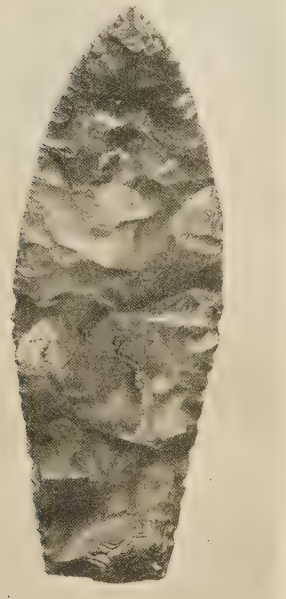


Fig. 6. Flint knife-dagger found at Arbor Low (Lucas Collection, British Museum). ½ linear.

Arbor Low is of such precise age as the barbed arrow-head may be assigned to, it having been found on the bottom of the deepest portion of the fosse. This form, being usually recognised as a late development in Neolithic flint working, points to the probability of the construction of the fosse and vallum not being assigned to a date earlier than the Late Neolithic period, although, judging from various "finds" of Neolithic arrow-heads of barbed form, they may perhaps have been in use, in some districts, about the middle of the Neolithic period. However, there were no indications that this arrow-head might have reached its position at a date long subsequent to the formation of the fosse. On the other hand, it is well known that the "tanged and barbed" type of arrow-head is very frequently found associated with Bronze Age finds. The existence of stone implements to the exclusion of bronze does not necessarily establish a Neolithic age for a monument such as this; and yet, considering the amount of excavation done, the absence of bronze has some significance. If Arbor Low was actually constructed in the Early Bronze Age, we should not expect to find any abundance of the then precious metal. Even small fragments of broken bronze would not be thrown away at this period; indeed, every care would be exercised to preserve fragments for the melting-pot, much as we preserve all broken and disused gold objects, merely on account of their value as gold.

On the south-east vallum a Bronze Age tumulus was constructed undoubtedly from material derived from the original monument of Arbor Low. As previously

[a] Since 1873.

[b] Reproduced here through the kindness of Mr. C. H. Read, F.S.A., Keeper of the British and Mediæval Antiquities in the British Museum.

[c] It is just possible that these implements may have been procured from tumuli near Arbor Low.

stated, no bronze was found here or in Gib Hill, just over 1,000 feet distant; but their other contents point to a Bronze Age culture, probably not particularly late. If the "finds" from this tumulus [a] on the vallum of Arbor Low are to be regarded as belonging to the Early Bronze period, "then," as Mr. Balfour said at Belfast, "the probability of the circle being of Neolithic date is much increased."

The absence of finds on the old surface line under the vallum in the parts examined unfortunately does not help towards the solution of the problem of date. Our conclusions, in the present state of our knowledge, have to be deduced on somewhat meagre evidence as regards the quantity and nature of the relics found. The discoveries made in 1902 correspond in the main with those made in 1901.

In conclusion, it remains to be said that the date of the construction of the Arbor Low Stone Circle should be located, in accordance with the evidence derived from these explorations, within the period covered by the Late Neolithic and Early Bronze periods; in other words the period of transition from stone to bronze.[b]

[a] The absence of bronze in this interment does not necessarily give an Early Bronze Age date for the burial, for bronze was rarely found with interments even in the fully-developed Bronze Age. The two pots found in the tumulus (Figs. 1 and 2) are not "beakers," or drinking vessels, which the Hon. John Abercromby has recently classified as being the oldest Bronze Age ceramic type in Britain. (*Journal of the Anthropological Institute*, xxxii. 373.)

[b] The date of construction of Arbor Low appears to tally precisely with Mr. Gowland's deductions as to the date of the erection of Stonehenge, from evidence derived from his excavations there in 1901. (*Archaeologia*, lviii. 85, 86.)

APPENDIX I.

Short Descriptions of the Photographic Views.

Plate XXXIX. fig. 1.—General view of the southern and western part of Arbor Low, from the tumulus on the south-east vallum, looking westward, showing the fosse in the foreground and the "spur" of *débris* thrown out from the tumulus by W. Bateman in 1845. The southern causeway is well defined. The large stone on the right, the one furthest away, is No. X., and the numbers of the others can be determined from the plan, Plate XXXVIII. The small dyke running in a south-south-west direction from the vallum of Arbor Low can be traced, especially where the stone wall on the left affords a background for it. In the distance, Gib Hill (or Bunker's Hill) is seen, surmounted by the Government Notice Board. It is here that Bateman discovered a Bronze Age interment in 1848. The mound is 1,043 feet from the centre of Arbor Low.

Plate XXXIX. fig. 2.—General view of the eastern and southern part of Arbor Low, taken from the crest of the vallum on the west. The photograph was taken particularly to show the present form of the tumulus on the south-east vallum, which Wm. Bateman, after his excavations in 1845, does not appear to have restored to its original form. In the foreground the leaning stone No. XVI. is seen; the central stone is No. I., and the largest on the right is No. X. The numbers of the others can be obtained from the plan. In the right-hand corner of the photograph the fosse is shown, and a portion of Section 5 in its returfed condition.

Plate XLI. fig. 1.—View of the bottom and side of the re-excavated fosse, Section 4, south-east corner of the cutting, showing the nature of the solid limestone *in situ*. The surface of the turf may be seen in the upper left-hand corner. The figure "29" indicates the spot where the greater portion of a flint kite-shaped arrow-head was found. Traces of fire were observed at the bottom in the dark corner on the left side.

Plate XLI. fig. 2.—View of the excavations into the ditch and rampart of Section 4 on the north of Arbor Low, and looking in a northerly direction. The nature and roughness of the limestone bottom and sides of the ditch, the boulders in the rampart and the little caverns, mentioned above, are well seen. The barbed and tanged arrow-head (No. 43, plan, section, and Plate XLII.) was found at the bottom of this ditch, on the left-hand side, but the actual spot does not come within the area of the photograph.

Plate XLIII. fig. 1.—View of the re-excavated fosse, Section 4, close to the northern causeway, and the cutting through the vallum in process of excavation on the second day, when the large limestones boulders, originally obtained during the construction of the ditch, were discovered. The unturfed part on the right of the cutting indicates the position of the Ditch Extension of Section 4, afterwards excavated in search of the hard wall of the causeway.

Plate XLIII. fig. 2.—View of Section 2 through the vallum and fosse on the north-west, looking in a northerly direction. The nature of the material forming the vallum is fully described in the paper. The men are working in the Ditch Extension of Section 2 (towards the northern causeway), in which the "finds" Nos. 5, 8, 10, 11, 13, 14, 15, and 17 figured in Plate XLII. were discovered.

Fig. 3.—General view of the Arbor Low Stone Circle, taken from the summit of the tumulus on the south-east vallum, excavated by William Bateman in 1845, looking in a north-west direction, with Upper Oldham's Farm in the middle distance. The group of three stones in the immediate foreground are Nos. XL., XLI., and XLII.; the numbers of the others can be obtained from the plan. The central excavations were in progress when this photograph was taken in 1902. (The human skeleton had been found in the "centre" in 1901.) The northern entrance causeway is shown, on the right of which is Section 4, through the vallum; and on the left Section 2 across the vallum, seen in its restored condition, but without turf.

APPENDIX II.

Short Report on the Human Skeleton found in the Stone Circle of Arbor Low in 1901. *By* J. G. Garson, *Esq.*, *M.D.*

The skeleton found by Mr. Gray near the centre of Arbor Low in August, 1901, is that of an adult male. (Plan, Plate XXXVIII.) The bones are not in a good condition as regards preservation; hence it has not been possible to ascertain from them the probable stature of the individual more nearly than has already been done by Mr. Gray in his paper. The upper part of the brain-case, or calvaria, and part of the face, though much broken and very imperfect, have been pieced together by Mr. Gray in a most creditable manner, so that it is possible to ascertain and determine the most important points in the morphology of the former fairly well. (See three photographic views of the skull, Plate XLIV.) The muscular ridges are well developed, the glabella and brow ridges are well marked and continuous with each other, the most prominent part of the latter being over the inner third of each orbit. The tubera of the parietal bones are prominent, the curved lines on the occipital bone and the surface between them for the insertion of the muscles of the head and neck are well marked; but the mastoid processes of the temporal bones are of very moderate size. As viewed from the front, the malar bone, which is retained on the left side, shows that the axis of the orbit slants markedly downwards as well as outwards; the orbital processes are of moderate size, and the interorbital width appears to have been of medium size. As viewed from behind, the lateral walls are seen to be nearly vertical but slightly converging, as they rise upwards, and finally curve over to form the vault with a flat or low arch. When viewed from above the outline of the calvaria is unsymmetrical in the occipital and posterior parietal regions, and converges slightly from the tubera of the parietals towards the orbital processes of the frontal with straight sides. On viewing the cranium laterally the profile outline of the mid-parietal region is elevated and bulged upwards: this fulness extends from one tuber to the other, while the frontal region above the glabella follows a graceful curve backwards and upwards to the bregma.

The following are the chief dimensions which the state of the cranium permitted me to determine: maximum length, 189 mm.; maximum breadth, 148 mm. These figures give a cephalic index of 78·2, which places it, as regards general form, above the middle of the mesaticephalic group (75-79·9) and shows that the individual when alive had a head slightly rounder than that of the average male of the present population of Great Britain, more

brachycephalic than in some parts of the country, but more dolichocephalic than in others. The cphryo-occipital length is 185 mm.; the projection of the glabella is, therefore, 4 mm. The minimum frontal breadth is 106 mm., and the maximum frontal breadth is 125 mm.; the relative properties of these two measurements to the maximum breadth (the latter being taken as 100) is 71·6 and 84·5 respectively. The horizontal circumference is 530 mm. Several other measurements are given in the *Report of the British Association*, 1901, pp. 438-40.

Little can be said about the characters of the facial portion of the cranium, as it is so imperfect. The palate is parabolic in form. The teeth are moderately worn down, especially the molars.

The osteological characters show that the individual was not of the type found in interments of the Neolithic period, neither do they point to his being of the Bronze Age type, though he was more nearly allied to it than to the former. On the other hand, there are no characters about the specimen which would preclude its being much more recent, even that of a person interred only about a hundred years ago. The extended position in which the body had been laid decidedly supports the view of the interment being of more recent date than the Bronze period, to which I consider the weight of the evidence afforded by the osteological characters also points.

APPENDIX III.

Short Descriptions of the Stones at Arbor Low as numbered on the Plan, Plate XXXVIII., August, 1901.

Note.—The length and breadth of the Stones can be ascertained from the Plan.

Stone I.—In centre, nearly flat, broken in two at N.W. end. Slopes a little to W. At E. point and on W. side it stands 1½ foot from turf. There is a trench along the W. side. Surface fairly smooth. There is a small flat stone to E. (not numbered).

Stone II.—Near No. I., nearly flat, but sloping a little towards W. to turf line. It is about 10 inches above turf on E. side. The slab is rather thicker at the N. end than at the S. end.

Stone III.—To the S.E. of No. II., flat, sloping very slightly to E. Pitted surface. The human skeleton was found close to S.E. of this stone; in fact the left femur almost touched it.

Stone IV.—A small stone to N.E. of No. III. Slopes rather considerably towards S.; only 2 inches above turf.

Stones V., VI., and VII.—In a group; the nearest stones of the circle to the S. causeway. A considerable depression in turf to S. of No. V. At S. end this stone stands about 2 feet above average turf level, and it slopes gradually to turf on N. The under-surface of stone at S. has been much polished by the rubbing of sheep. No. VII. slopes towards N., and is fractured in two places. At S. end it is about 1 foot from turf. No. VI. is a fractured stone about 9 inches thick, which stands on end between Nos. V. and VII., leaning slightly to W. Mr. A. L. Lewis, who measured the circle in May, 1871 (see his plan, etc. in *Anthropologia*), says that Stone VI. was not then in its present position, but has been placed there since. On going over the ground in 1901 to revise his plan, he thought he saw signs of a certain amount of surface digging during the previous thirty years, but no material alteration in the circle generally.

Stone VIII.—About 9 inches above turf, in a slight depression; slightly higher in the middle. Pitted and rough, but "pits" are not very frequent, large but not deep.

Stump 1.—Between Stones IX. and X. Stands about 1 foot from turf level, and leans a little towards centre.

Stone IX.—Flat, sloping slightly towards ditch on S.W. Stands 1½ foot from turf on S.W., and 1 foot on N.E. Much pitted surface, small, frequent, and deep.

Stone X.—Marked depression in turf at W. end of stone, which end is of oblong form, 2 feet in thickness. This depression sinks to about 6 inches below the surrounding turf level. The stone, which slopes towards the N.E., is only 10 inches above turf on E. side. Upper surface, fairly flat; characterised by a broad crack along middle, and what may be called a "pot-hole" near N. corner. Turf grows between stone on N.W. Much sheep-rubbed underneath at S.W.

Stones XI., XII., and XIII.—Small stones in a little group between Nos. X. and XIV. In a slight depression, partly in continuation of depression at the W. of Stone X. No. XI. slopes towards centre, and has a smooth flat surface. Height 1 foot from turf at S.W., 4 inches at other end. No. XII. has turf growing up the sides; greatest height at N.W., 4 inches. No. XIII. slopes towards S.W. and S.E. to turf; on other sides, 4 inches high.

Stone XIV.—Lies in slight depression at ditch end; flat; pitted in places by weathering, with cracks in which turf has grown. Height about 10 inches from turf.

Stone XV.—Very smooth surface, sloping to turf on E.; at its squared W. end, its height is 1·3 foot.

Stone XVI.—Upper side fairly flat; leans at about 35 or 40 degrees with general turf level towards the N.E. In a well-marked depression, above which it stands, at highest part, $3\frac{1}{2}$ feet. About $1\frac{1}{4}$ foot thick at S. and $1\frac{1}{2}$ foot at N. The only stone in the circle that can be said to be standing (1901).

Stone XVII.—Lies in slight depression; nearly flat, but sloping slightly towards the W. ditch, where its height is only 6 inches, rising at N. to 1 foot; very rough surface, sides a little overgrown with turf.

Stump 2.—Cleaved in two and partly overgrown with turf; height 10 inches.

Stone XVIII.—Slopes off towards the W. ditch; at E. its height is about 9 inches; at W. about $1\frac{1}{2}$ foot. Flat surface, but much pitted, and turf-covered in places.

Stump 3.—Stands at two highest points 1 foot from turf, with a dip of 4 inches between.

Stone XIX.—On a slight mound. Height at S. 0·7 foot from average turf, rising slightly higher (ridge N.E. and S.W. line), and then gradually sloping off to turf at N. and N.W.

Stone XX.—Slopes all round to turf from a central point, height 1 foot. It does *not*, however, slope off at W. point.

Stone XXI.—Lies in slight depression, sloping slightly towards ditch. Flat surface and pitted in places. Height, 1·2 foot. Ragged along N.E. edge.

Stone XXII.—Flat; slopes towards the ditch; height, 1·3 foot. Half-oval weathered hole through side of stone on S.W.

Stone XXIII.—Lies in very slight depression; very uneven side towards W. Rough surface, pitted somewhat to S.E., S., and S.W., and highest at these points. Flat surface to N. and N.W., height 1 foot. At other points it is 1·2 foot high.

Stone XXIV.—Slopes towards N.; slopes-off to turf at N.W. and N., but not at N.E. Depression in turf at S. end, extending half-way across stone to N. At S.E. corner its

height is 1·3 foot; at S.W. 2 feet, gradually sloping along W. face to turf on N.W. Flat surface with small but numerous "pittings."

Stone XXV.—Marked depression in turf at S., but not at N. Height at S. 2¾ feet. The stone slopes towards the N. where it reaches the turf level. Rough surface, with fracture at N., running N.W. to S.E. Turf rises in depression under the stone at S., to support it. The stone is tilted up at S., at an angle of about 20 degrees with turf. Much rubbed underneath, by sheep.

Stone XXVI.—In slight depression to N., more marked to S. Slopes towards N., almost to turf level. At S. its height is 2 feet. It is about 1½ foot thick at S. Large "pittings," but not numerous. Two oval holes, through stone to turf. The larger hole measures 18 inches by 10 inches.

Stump 4.—Very narrow and sharp, about 18 inches high.

Stone XXVII.—Very rough, about 1·5 foot high in middle. At N., an angle 3 inches from turf, from which the stone rises abruptly.

Stone XXVIII.—Height 2 inches above turf: almost entirely overgrown except a small portion to N. Flat.

Stone XXIX.—Pointed at both ends. Slopes towards N. Smooth flat surface and sides. A depression in turf at N. only, where its height is about 1 foot. The thickness of stone appears to be only 6 inches at N.E. point, whilst on the S.W. side it is 2 feet, to which it gradually rises from N. and N.E. The stone is thicker at S. than at N.N.W.

Stones XXX. and XXXI.—Slight depression in turf between and to the E. of these stones. Flat and fairly smooth; height 1 inch or 2 inches from turf. No. XXX. slopes very slightly to N., No. XXXI. somewhat considerably to N. and E.

Stone XXXII.—Of the nature of a stump, but rather larger. Slight depression to S.W. Mound of turf to N.E., E., and S.E., where the stone only rises 2 inches. On S.W. it is 1 foot high. Turf grows in places on top, which is rather flat. Rough at sides, sloping abruptly from top at S. and N.W.

Stone XXXIII.—In slight depression, sloping slightly towards ditch. Fairly flat surface. Height about 1 foot. Point to N.E. only 3 inches above turf.

Stone XXXIV.—In a marked depression on inner bank of ditch, particularly marked at N. and E. Somewhat heart-shaped, flat and fairly smooth. About 6 inches in height, with turf growing up sides everywhere, except at W. and S.W.

Stone XXXV.—Flat, smooth surface. Slopes slightly towards S.W. On W. slopes off to turf. On E., 9 inches high.

Stone XXXVI.—Smooth, but uneven surface. Slopes slightly to E., and partly overgrown with turf in centre and to S. and S.S.W. At N. and N.N.W. it is 3 inches high, but turf runs up to level of stone elsewhere.

Stone XXXVII.—Lies in slight depression, which deepens considerably to E. and S.E. Slopes slightly towards ditch and N., with fairly smooth, flat surface. At W., 2 feet in height, and at E. 2·3 feet. This stone is cleaving lengthwise, or, rather, horizontally into three slabs. (See photograph, Fig. 3.) At N. its height is only 10 inches. Upright sides all round.

Stone XXXVIII.—Small flat stone, level with the turf, which is growing over it. Plan shows stone appearing above surface. Slopes to N. and E.

Stone XXXIX.—On slight elevation. Broken into three pieces, all of which are becoming overgrown with turf. The N. piece is nearly level with turf. The middle has rounded surface, rising to about 6 inches above turf. The piece to S. slopes from N. end to S., where it reaches the turf; the N. end of this piece is 8 inches above turf.

Stump 7.—Much overgrown with turf. A piece of stone, 9 inches by 6 inches only appears above the surface. Plan shows the probable outline with turf removed.

Stones XL., XLI., and XLII.—Together in a mass in slight depression. (See photograph, Fig. 3.) No. XL. slopes to S. and S.S.W.; highest point at N. 1½ foot above turf; the S.E. and N.W. points are about 10 inches from turf; at S. and S.S.W. it meets the turf. No. XLI. slopes from the S.E., meeting the turf level under No. XLII.; rather rough surface; at N.E. 1·5 foot from turf, at S.E. 1·3 foot, and at S.S.W. 1 foot. No. XLII. overlaps No. XLI. to S.E., and slightly over No. XL. to N.E.; thickness, about 1 foot at S.E.; slopes to centre, where it is only 4 inches from turf. At S.E. end its height is about 1½ foot.

Stone XLIII.—Slopes very slightly towards N.W. Flat and smooth surface. Runs to turf on N.W., S.E., S., and S.W. At S.E. it is about 4 inches above turf.

Stump 8.—Very narrow, just appearing above turf.

Stone XLIV.—Flat, sloping slightly towards ditch. Height about 7 inches at N.W. S.S.E. and N.E. corners overgrown with turf; very little of the stone at S.E. shows above turf. Uneven and weathered.

Stone XLV.—Flat, with uneven weathered surface and fractured. More than half the stone is overgrown with turf at intervals.

Stone XLVI.—Nearly flat, sloping slightly towards N.N.W. Fairly smooth surface. "Shoulder" across middle, height 7 inches above turf. Turf growing across depression below "shoulder." A stone overgrown, to S.S.W. of XLVI., is dotted on plan.

Stumps 9 *and* 10.—Small stones, just appearing above surface.

Stumps 11 *and* 12.—Ragged stones, broken off, just appearing above surface.

Stump 13.—This stump, leaning towards E., was only revealed by excavation.

Stones outside S. Causeway.—Fairly large, long, and narrow stone, height at E. 1·3 foot from surface. Stump close to. Two rounded stones a little above turf level, on side of S. rampart.

Two Stones in Ditch.—In ditch on S.W. One long and narrow, about 8 inches in height; the other rising 1 foot above surface.

There are other small stones here and there at Arbor Low, which seem to be hardly worth recording, although they might prove to be somewhat larger if exposed by excavation.

APPENDIX IV.

Explanation of the Plan and Sectional Diagrams of Arbor Low, Plates XXXVIII. and XL.

The plan has been delineated to a scale of 240 to 1, or 20 feet to 1 inch. A scale of metres is also given for the sake of continental archæologists. The square, which is 320 feet (98 metres) on each side, encloses about $2\frac{1}{3}$ acres of ground, which shows a fall, from the top of the tumulus opened by Mr. Bateman in 1845 to the northern corner of the plan, of 24·5 feet (7·47 m.), as indicated by the contours of 6 inches vertical height. These contours have been numbered by sloping figures. The stones are numbered in Roman figures, and some of the smallest stones and the stumps are marked by Arabic numerals. The numbered "finds" are indicated by heavier sloping figures, a list of which is given below. The Governmental boundary stones are represented by black squares, and the position of the Notice Board in the centre has not been omitted. A spot on Stone III. marks the actual centre of the circle, from which point two circles have been described of diameters of 190 feet (58 metres) and 250 feet (76·2 m.) respectively, drawn with a view of showing to what extent the crest of the vallum and the middle of the surface of the fosse deviate from the true circle. The positions of the excavations are denoted by rectangular enclosures, through which the contours have not, in all cases, been continued. The sides of the ditch excavations have been represented by escarp-shading, and the limestone *in situ* not actually forming part of the sides of the fosse is indicated as rock; whilst the dotted bands in Sections 1 and 6 are used as symbols for clay. The "lettered" lines traversing the cuttings across the fosse and vallum indicate the lines on which the sections have been taken (Plate XL.). Various symbols have been used in the sections for representing the nature of the silting of the ditch and the material forming the vallum; and the "finds" have been projected into the sections on the lines which happen to be nearest.

In the case of the section on the line Q-R of plan, given on Plate XL., the vertical dimensions from the datum-line to the turf-level are 0·5 foot less than the actual length represented by the dotted lines. This was caused inadvertently by raising the datum-line in plotting the section without altering the actual figures. The slight error, however, in no way misrepresents the form, in section, of the excavated vallum and fosse.

List of Numbered Finds.

1. Thirteen teeth of ox, bottom of ditch, depth 5·4 feet.
2. Pieces of red-deer's antler, depth as No. 1.

3. Rudely-chipped stone implement, depth 1·2 foot. (Plate XLII. No. 3).
4. Doubtfully-artificial stone scraper, on "old surface line." (Plate XLII. No. 4.)
5. Worked flint flake, depth 0·7 foot. (Plate XLII. No. 5.)
6. Worked flake of black flint, depth 0·5 foot. (Plate XLII. No. 6.)
7. Chipped end-scraper, depth 0·5 foot. (Plate XLII. No 7.)
8. Stone scraper, with bevelled edge, depth 1·2 foot. (Plate XLII. No. 8.)
9. Fragment of human ulna, depth 0·5 foot.
10. Outside flint flake, worked, depth 0·8 foot. (Plate XLII. No. 10.)
11. Worked flint, depth 0·8 foot.
13. Flint saw, depth 1·5 foot. (Plate XLII. No. 13.)
14. Small, narrow, flint scraper, depth 1·4 foot. (Plate XLII. No. 14.)
15. Large flint scraper, depth 2·3 feet. (Plate XLII. No. 15.)
17. Six large flakes of black flint, found together, at a depth of 2·7 feet, on a ledge of the solid side of the northern causeway. (Plate XLIV.)
19. Fragment of Romano-British pottery, depth 0·5 foot.
20. Flint knife, of broad, leaf-shaped form, depth 0·9 foot. (Plate XLII. No. 20)
21. Rough scraper, depth 1 foot.
22. Worked flint flake, depth 1·2 foot.
24. Flint flake, depth 1 8 foot.
25. Long chert flake, with rough serrations, depth 2 feet.
26. Small white flint knife, finely chipped, depth 3·2 feet. (Plate XLII. No. 26.)
27. Flint end-scraper, depth 0·9 foot. (Plate XLII. No. 27.)
28. Flint end-scraper, depth 1·4 foot. (Plate XLII. No. 28.)
29 Two-thirds of a kite-shaped flint arrow-head, depth 3 feet. (Plate XLII. No. 29.)
30. Combined end- and side-scraper of flint, depth 0·7 foot. (Plate XLII. No. 30.)
31. Calcined chert scraper, depth 0·9 foot. (Plate XLII. No. 31.)
32. Narrow, black, chert scraper, depth 1·6 foot. (Plate XLII. No. 32.)
33. Black chert flake, depth 1·8 foot.
34. Small, discoidal, flint scraper, depth 0·6 foot. (Plate XLII. No. 34.)
35. Fragment of Romano-British pottery, depth 0·3 foot.
36. Flint flake, depth 0·3 foot.
37. Small chert scraper, depth 4·8 feet. (Plate XLII. No. 37.)
38. Flint flake, depth 0·5 foot.
39. Small horn of red-deer with four tines, depth 4·6 feet.
40. Worked flint flake, depth 1·2 foot. (Plate XLII. No. 40.)
41. Small chert flake, depth 0·4 foot.
42. Fragment of pottery (? Romano-British), depth 1·3 foot.
43. Barbed and tanged flint arrow-head, found on bottom of ditch, depth 5·7 feet. (Plate XLII. No. 43.)

APPENDIX V.

Relief Model of the Arbor Low Stone Circle.

On commencing the survey of Arbor Low the subsequent production of a relief model was fully contemplated, so that much care was given to details. For the purpose of this model a block of well-seasoned mahogany was obtained, measuring 2 feet square and 3 inches thick. The highest portion of the model was represented by the surface of the block. The contours having been drawn on the face of the wood, the lowest-level contour was firstly cut down to the proper depth in accordance with the scale of the model. Each level was separately worked out, the result showing a fall of $24\frac{1}{2}$ feet (7·47 metres) in the ground from top to lowest point. When the carving was finished, the surface exhibited little steps, each representing one foot vertical height. The next process was to pare the steps down to a smooth surface, finishing with sand-paper.

The miniature stones were modelled to scale in soapstone during leisure moments at Arbor Low. They were fixed into the body of the model by undercutting and plaster.

The final processes were the painting of the stones and the grass-green surface, the indication of the excavated portions and the position of the "finds," the numbering of the stones, the lettering in white oil-paint, and the printing of a lengthy title on a polished and ebonized mahogany block. Four hundred and fifty hours were bestowed on the formation of the model.

Fuller details, with three illustrations, have been published in *Man* (Anthropological Institute), October, 1903, No. 84, p. 145.

XXII.—*The Submerged Greek and Roman Foreshore near Naples.* *By* R. T. Günther, *Esq., M.A., Fellow of Magdalen College, Oxford.*

Read 22nd January, 1903.

'Soleo enim et in aliena castra transire, non tamquam transfuga, sed tamquam explorator.' Seneca, Epistul. Mor. I., Ep. II.

Some years ago it occurred to the author that certain submerged ruins in the Bay of Naples were sufficiently well preserved to repay investigation with a view to supplementing the history of the post-Roman land-movements, as recorded upon the columns of the *Macellum* of Puteoli, commonly known as the "Temple of Serapis."

The discovery that one submerged "rock" after another showed clear signs of artificial origin was so fascinating, opening as it did a new field for research, that we were led to add to our geographical investigation a survey of the sunken antiquities.

It must be borne in mind that geological evidence indicates that the Roman shore, then 16 feet higher than now, had fallen close upon 40 feet by the twelfth century, remaining at that low level for at least 300 years,[a] and that it was rising to the present level in the first half of the sixteenth century.[b]

By being borne down into deep water, the ancient buildings have been preserved from the weathering they would have suffered had they remained at the surface.

During the summer of 1901 we examined ruins near the edge of the sea at

[a] The upper erosion-line upon Capri then etched is more deeply cut than the present line, which has been some three and a half centuries in forming.

[b] For an account of the rise and fall of the land see the author's paper in the *Geographical Journal* for August and September, 1903.

many places round the bay, but it was at the southern extremity of the promontory of Posilipo that our researches were most amply rewarded.

The sinuous coast-line of the volcanic ridge of Posilipo terminates abruptly to the south-west. At Coroglio the cliffs of tufa, 450 feet high, yellow and bare save for a fringe of vegetation at the summit seen in outline against the sky, descend sheer into the sea. The cliffs bend round a bay, the Cala di Trentaremi, where the rubble from the quarries on the strip of beach and the debris of a landslip piled up the barren cliff side enhance the arid look of this wilderness of rock. Further on, the dark-mouthed caves in which the sea roars lend the cliffs an air of mystery from which the weird rock at the headland, the Scoglio di Virgilio, does not detract.

We round the Scoglio and all is changed; little headlands, vine-clad, rise picturesquely from the water, the little coves between them are backed by a strip of beach on to which opens the vineyard gate; and so in and out till the Capo is reached, where the coast, rounding off, bends towards Naples.

Coves, cliffs, headlands and the water lapping them, such is the coast as we see it now; otherwise did the Romans. A foreshore outlined the coast; the Coroglio cliffs no longer fell precipitous into water, they bordered a rocky way; in the caves in which corals now luxuriate the Roman workman could sit chiselling the block of tufa green from the quarry. Again rounding the Scoglio di Virgilio, how different a scene: a Roman road wound its way at the foot of the headlands, passing through the most prominent; groups of buildings stood by it down to the water's edge, and often on massive piers into it, as the fashion among the Romans was.

The buildings of southern Posilipo were in three principal groups or Regions, as we shall call them, of which the Gaiola Region was the most important. Instead of being an island, the Gaiola rock was a little hill upon a promontory which extended for a quarter of a mile beyond the present shore: around and on it stood splendid villas, colonnaded temples, and the little pavilions by the sea such as we see painted upon many a Pompeian wall; under the lee of the promontory rising brown out of the blue water was a row of massive piers, the mole of the little harbour; on the heights above were the odeon, the theatre, the temples, and thence the great tunnel started which opened on to the highway leading to Puteoli.

The line of houses was continued to the Region of Marechiano, in which stood prominent the great building associated with the name of Vedius Pollio, and at the eastern extremity, within sight of Naples, the Rosebery Region; no tradition

remains of it, and excepting the solitary Pietra Salata no trace above water, but from the nature of the submerged remains we estimate the buildings to have yielded in splendour to none along this coast.

But it is not merely as a favourite seaside resort that we should view this line of coast, for in addition to the natural beauty of position and the facilities afforded by a foreshore, the geographical position of the promontory, advancing almost midway between the promontories of Minerva and Misenum, would have rendered it a natural halting place in the early days of the Greek settlements, when active intercourse was kept up between the colonies of Paestum, Cumæ, and Pithecusa.

In the summer, the season of ancient navigation, the daily breeze blows in to Naples from the sea, and a port at the Point of Posilipo, being so much to windward of the head of the bay, would have great advantages. These natural conditions held good in the Greek days. The settlers who wished to keep in touch with the mother colony could have found no happier site in the bay for the town which they are known to have founded, and which was called Parthenope, and later Palaepolis. The site of this city has been forgotten, and there has been much speculation about it. Some authorities place it on the ridge of Pizzofalcone or on the Castel dell' Ovo, others in the plain or at the foot of Vesuvius where Torre del Greco now lies, and others again on Posilipo, and that is the site that corresponds best with what Livy, the only authority of antiquity who makes a definite statement concerning it, tells us. He says:

> Palaepolis fuit haud procul inde ubi nunc Neapolis sita est. Duabus urbibus idem populus habitabat. . . . . Jam Publilius inter Palaepolim Neapolimque loco opportuno capto diremerat hostibus societatem auxili mutui qua ut quisque locus premeretur usi inter se fuerant. Liv. viii., 22.

Considering then the favourable position of the south end of Posilipo for commerce in the early days of navigation, the indications contained in Livy's statement, and the fact of a city leaving no trace in a district which has never ceased to be historical, may we not conjecture that Palaepolis stood upon the Gaiola Region, and that whatever traces of it might have been left under the later buildings of the Romans were lost to us when the foreshore sank?

THE SUBMERGED REGIONS OF POSILIPO.

I.—The Rosebery Region.

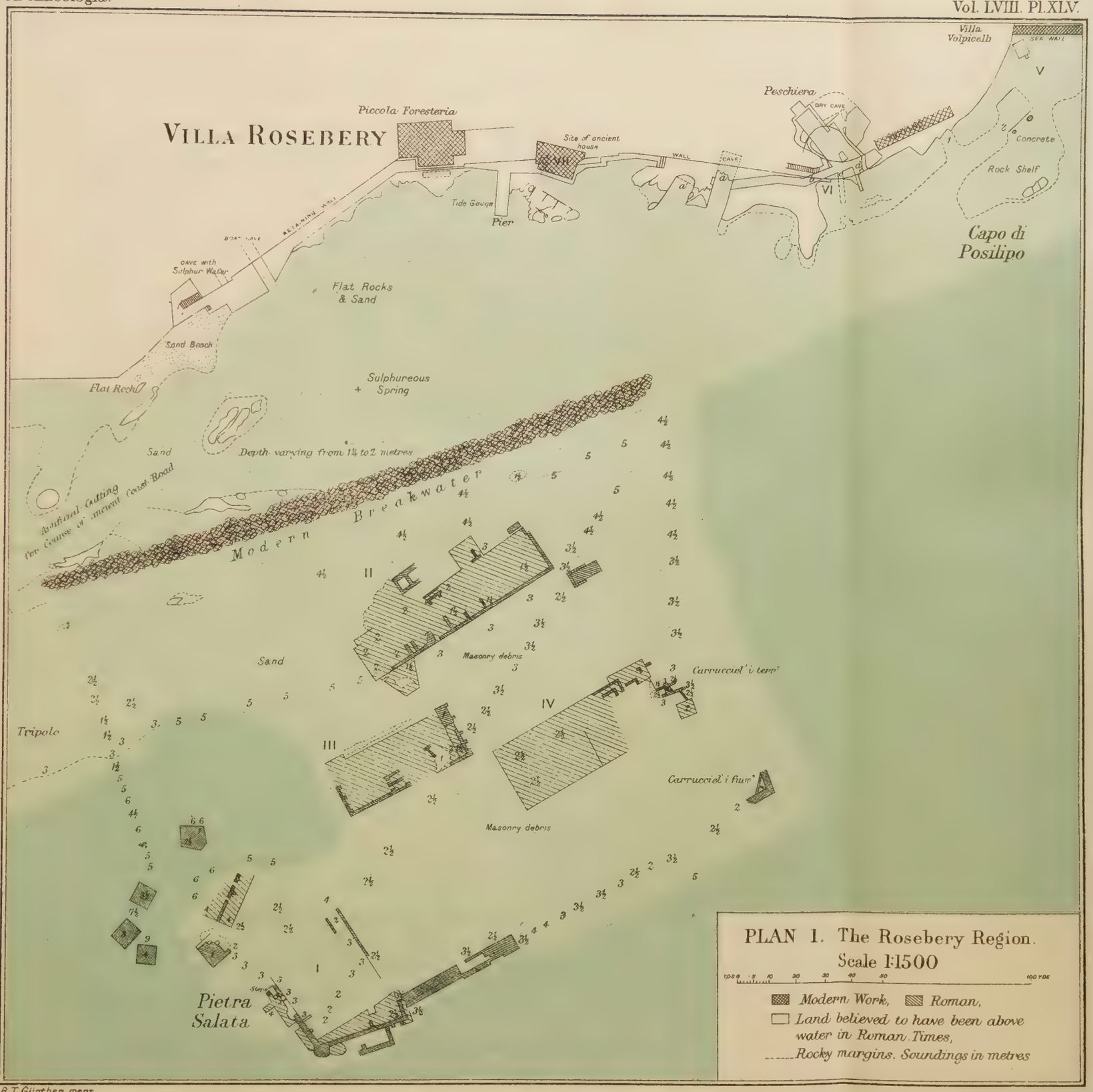
At the Capo di Posilipo, the furthest point of the hill visible from Naples, the low cliffs end in a flat shelf of rock, which is partly exposed when the water is low. Upon the surface are artificially cut grooves and hollows, the scars of the foundations of buildings which have long since been washed away, and in several places[a] small patches of ancient concrete still adhere to the rock. (**V.** Plan 1.)

Immediately beyond the turning of the Capo the dark pine woods on the hills map out the fine property which formerly belonged to the Bourbon Prince Luigi, but which is now in the possession of the Earl of Rosebery. The natural foreshore has been more or less concealed by a retaining wall 10 to 16 feet high, and a narrow quay, but in the ancient buildings and artificial caves may still be seen indications of a bygone population and of the subsidence of the land.

Extending parallel to the shore is a modern breakwater, which, like many of those around the coast, is a *scogliera* made of huge rough blocks of lava piled up loosely to a height of some 6 feet above the water. It is 213 yards in length, and was built for Prince Luigi by convict labour, ostensibly to enclose a fisherman's harbour, but really to shelter the landing place of his villa. The western end rests upon a part of the shelf of rock already mentioned, which seems to have been divided from the shore by an artificial cutting, now forming the narrow entrance to the harbour, but which we believe to have been originally cut for the ancient coast road between Neapolis and Puteoli.

Outside the Bourbon breakwater we discovered the foundations of an important group of ancient buildings spread over a square area which has the breakwater for its base and the Pietra Salata for its southern angle. This "salted rock," about 218 yards from the shore, is a mass of concrete about 11 yards long, 2 yards wide, and standing 3 to 4 feet out of the water. With the land at a higher level the situation must have been superb, but now not a stone is to be seen above water, save only the Pietra Salata.

[a] Near where the short modern sea wall shelters the landing place below the Villa Volpicelli.



R.T. Günther, mens.

C.F. KELL & SON, LITH.

PART OF A SUBMERGED GREEK AND ROMAN FORESHORE NEAR NAPLES.

Published by the Society of Antiquaries of London, 1903.

On summer mornings the positions of the old houses are clearly marked by the boats of the shore fishermen, who earn a precarious livelihood by raking for shell-fish and other *frutti di mare* in the crannies of submerged walls. In rough weather the white crests of breaking waves and streaks of foam indicate more precisely the ancient buildings and the forces which have compassed their ruin.

Some of the old walls are submerged 15 feet and more, but others come so close to the surface as to be dangerous to ill-directed small boats, and according to our Consul's report for 1901 even government steam launches occasionally ground upon them.

A general survey of the area on which the submerged ruins stand is shown on Plan 1. It is possible to wade from the Pietra Salata southwards to a structure shaped like a bastion, from which a massive wall can be followed for about 76 yards in an easterly direction. Outside this wall the water rapidly deepens, within it is relatively shallow. There are several indications of small chambers built close to the wall, and exhibiting a complexity of structure which seems to indicate that the building must have been intended for purposes other than those of mere sea-wall; perhaps it was the lower part of a little temple, or *sacellum*, by the sea. Further east, and almost in the same straight line, is the danger to navigation known as the *Carrucciel' i fuor'*; it was probably the eastern angle of the structures described, although it is now separated from them by a considerable space of water 6 feet deep.

Within these outer works are three rectangular rock and concrete foundations, numbered **II.**, **III.**, **IV.**, on Plan 1, the two longer ones measuring about 65 yards by 20 yards, and raised about 6 feet above the present sea bottom. From these the lower courses of some walls rise to within a yard of the surface. The longer sides of the foundations are all parallel, and face south-south-east. In the case of the two southern foundations, the superstructure is in the best state of preservation at the north-east end, that being the most sheltered from storms. Those details of the superstructure which are still traceable are sufficiently indicated in the plan, and so we need only state here that the end wall of the southern foundation was apparently strengthened by five buttresses which may have supported arches like those shown on one side of the triangular foundation represented in fig. 3, and that in the easternmost (**IV.**) the fabric has a more complicated structure, which is not easy to unravel.

We believe that we have here the foundations of three Roman buildings of the type represented in mural paintings found in Pompeian houses. It will be noticed

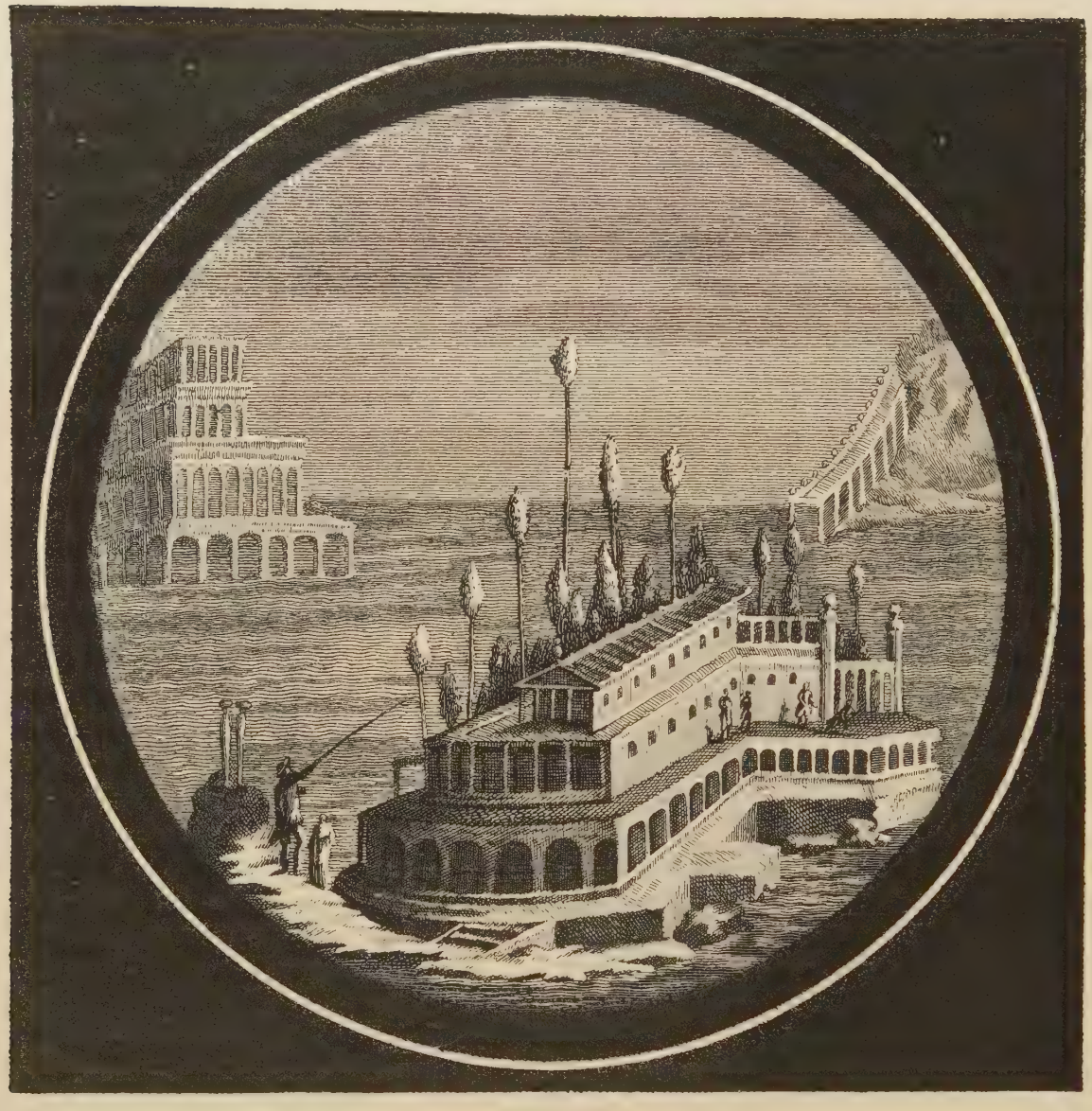


Fig. 1. Wall painting showing foundation of a building by the sea.

that in the paintings of seaside villas of the type reproduced in fig. 1,[a] the buildings

[a] Fig. 1 is taken from *Le Pitture antiche d'Ercolano*, ii. 285, which has also been copied by Roux ainé, iii. pl. 16. Compare also Roux ainé, iii. pls. 12, 23, and 28, and Mau, fig. 270. The buildings in our illustration show the covered galleries or *cryptoporticoes* of Pliny (*Epist.* II. 17), and the open terraces or *hypaethra* of Vitruvius (v. 31). On the rock to the left of the foreground are two *tonsillae* or posts for the mooring of boats, cf. Günther, *Geographical Journal*, Sept., 1903, fig. 12 and footnote to p. 273.

are represented as standing upon raised rectangular foundations of precisely the same character as those which we claim to have discovered here, and which have also been found below other ruins, to be presently described. The rounded bastion is very like the structure similarly situated, depicted in the fresco of a house within a sea-wall ornamented with statues. (Fig. 2.)[a] In the absence of

Fig. 2. Wall painting showing a sea-wall. On the pedestal is a statue of Hercules.

other evidence we claim that it is very possible that here we have concrete foundations of houses such as those which Horace had in his mind when he wrote :

> You on the verge of death contract for blocks of marble to be hewn, and unmindful of the grave, are rearing mansions and are all eagerness to thrust backward the shores of the sea that roars against Baiae ; for not enough does the bound of the mainland enrich you.[b]

Soundings made inside the Pietra Salata show that the depth over most of the area is only 10 feet or less, but that there is a depression of some 20 feet which runs in from the south-west. The southern limit of the depression is marked by two artificial structures which rest upon the same rock as the Pietra Salata, and which probably formed part of the same edifice. The northern limit is formed by the *Tripolo*, a large rock, upon which we have not noticed any ancient foundation,

[a] From *Pitture antiche d'Ercolano*, ii. 295. The original was found at Gragnano.

[b] Od. ii. 18 ; *cf.* Od. iii. 1 and 24, also Virgil, Aen. 9, 711.

but which must have been high and dry in the Roman period. In the depression stand four rectangular piers of concrete each close upon 20 feet square. The piers are about 16 feet in height, the outer one rising to within 13 feet of the surface from a depth of 30 feet and the innermost to within 3 feet from a depth of about 16 feet. If we assume that the lowest pier originally projected about 4 feet above the surface, the water would have been two fathoms deep.

About their being artificial there can be no doubt, for the upper portions at any rate are of concrete and their shape is not a natural one. They closely resemble the piers employed by the Romans as breakwaters or defences to some of their harbours, and they may have been constructed either for the purpose of breaking the force of the waves, which would otherwise have run up the depression and have broken violently at the foot of the buildings, or to shelter a small harbour (fig. 11), or else as supports for ornamental columns or for statues, like the piers represented in several Campanian frescoes. (Fig. 2.) In the picture[a] reproduced in *Archaeologia*,[b] and in fig. 3 similar piers carry the ends of a wooden pavilion overhanging the sea, and bridges like that represented in an unpublished fresco from a villa at Boscoreale, now in the British Museum,[c] were not unfrequently thrown out to the piers from the shore. This fresco measures 13 inches by 42 inches. In the foreground are four or five figures near a small three-storied pavilion on the edge of the water, watching the departure of a sailing boat. On the right is a man seated and fishing from the bridge. In the distance two groups of buildings can be discerned across the water. A second sailing boat, almost obliterated, was painted on the left of the pavilion, but it is difficult to make out.

At the back of this region traces of ancient work are still discernible under the low cliffs below Villa Rosebery, where a few excavations in the tufa, now almost obliterated, are the last vestiges of buildings which once overlooked the foreshore.

One of these ancient sites is the Peschiera, at the extreme east of the property, in some large caves hollowed out of the solid rock and furnished with an ingenious arrangement of channels and sluice-gates for renewing the water within. The caves seem to have been enlarged and adapted for pisciculture when that industry was actively carried on in several places in the neighbourhood under the Bourbon rule; but now, either owing to the jealousy of the fishermen,

[a] *Le Pitture antiche d'Ercolano*, 1760, ii. pl. li. p. 277. The original was found at Gragnano.

[b] Vol. lvii. 235.

[c] Register No. 99, 2, 15, 2. Compare also Roux ainé, iii. pl. 23.

to the raids of poachers, or to the lack of financial support, it has, like all other appurtenances for fish culture along the Posilipo coast, been allowed

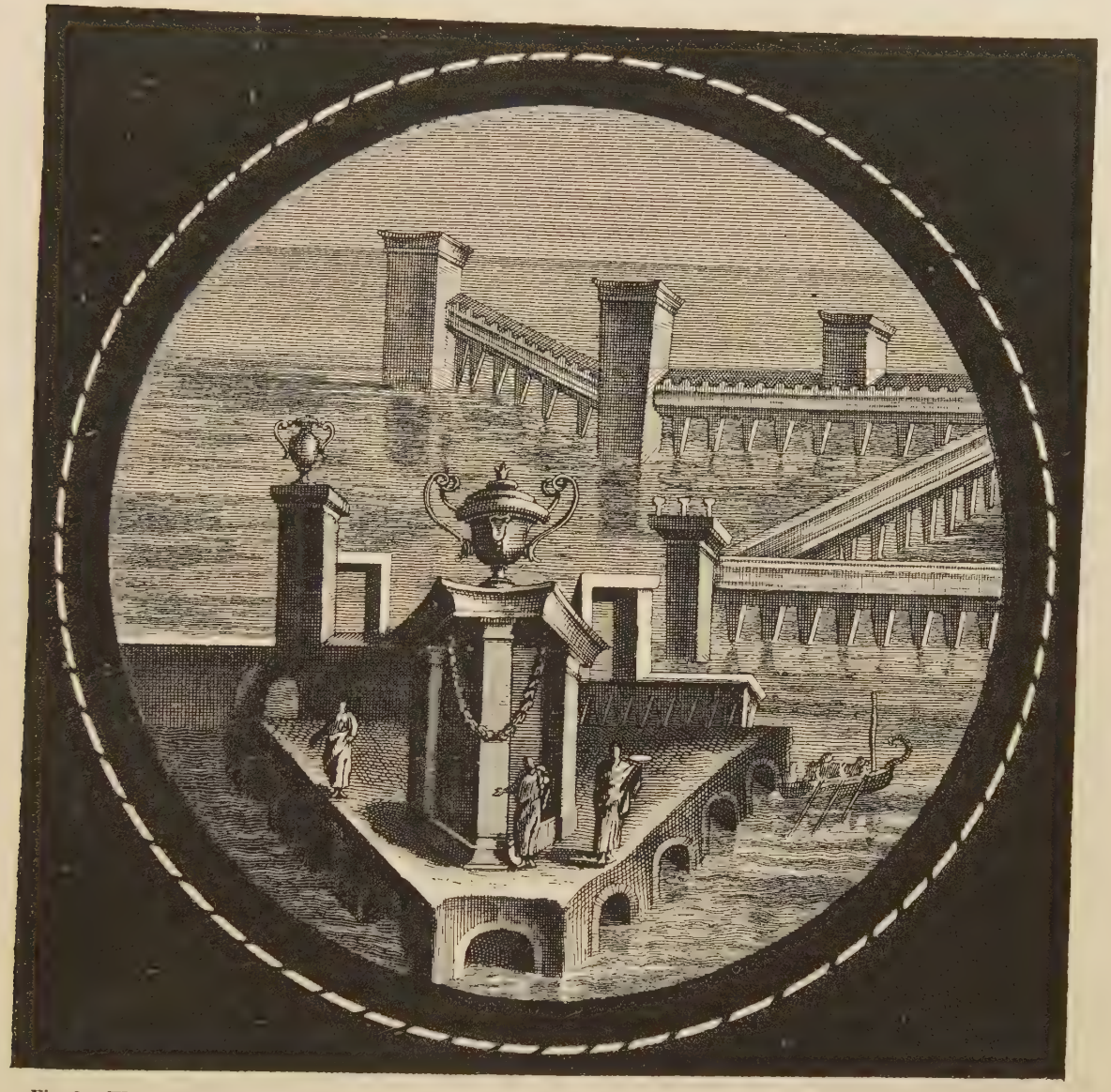


Fig. 3. Wall painting showing galleries supported by piers in the sea and a triangular foundation resting upon arches.

to fall into decay, and the outer cave, owing to the collapse of its roof, notwithstanding a masonry arch, is open to the sky.

It is difficult to believe that the solid rock was excavated on so large a scale solely for cool fish-tanks; it is more likely that we have here the quarries

whence the stone used in the erection of the neighbouring buildings was obtained, and which were subsequently adapted for use as a Peschiera. This view is supported by the fact that one of the caves has been excavated down to, but not beneath, the water-level, whereas those which have been adapted as fish-tanks have been deepened so as to contain from 2 to 3 feet of water.

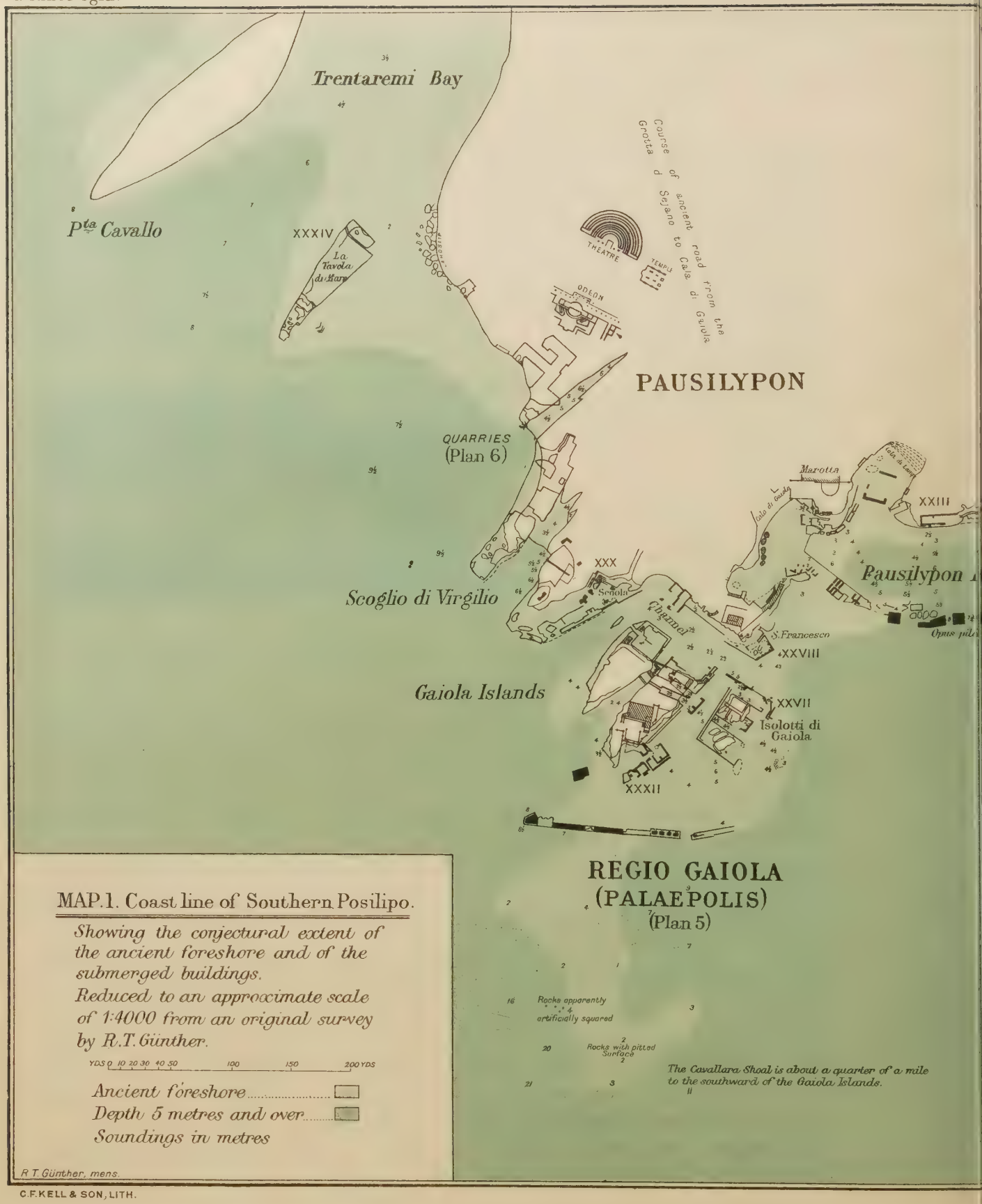
The outer parts of the excavation (**VI.** *b*, *c*) seem to be of a much greater antiquity than the inner, and still show traces of ancient plaster lining. The groove of erosion which we associate with the period of greatest submergence of the land is well marked on the face of the cliff, and is continued into the mouth of the cave, thus attesting its antiquity.

Fig. 4. Artificial Caves at Villa Rosebery. (Site VI.)

The low artificial cave (fig. 4, *a*) near the mouth of the western outlet of the Peschiera, is submerged to a depth of 3 feet. It seems once to have been longer, but the roof being thin has partly fallen. Just beyond and lower down another artificial cave is outlined in the rocks (Plan 1, a^1).

An ancient building stood upon the site (**VII.**) of the smaller of the two modern houses on the sea, which has been built over a fisherman's cottage of great age. The living room of the cottage, which extends into the rock behind, has become the basement of the house; but so little is the floor raised above the water, that, notwithstanding the modern breakwater, waves frequently dash over it. It is unlikely that this fisherman's cottage was built in so uninhabitable a situation; we prefer to accept it, together with the submerged caves already mentioned, as having been part of the group of Roman buildings erected at a higher land-level. The rocks in front of the cottage bear marks of having been quarried, and perhaps of the foundations of other buildings. No pieces of Roman sculpture or other antiquities have been found here, so far as we are aware, unless the ancient columns which used in former years to stand, connected with chains, below the Villa Gerace, came from this locality.

It is strange that this important quarter should have disappeared without leaving any local tradition of its existence. It should, however, be remembered that the little old church of S. Maria Fortuna in the vicinity has been supposed



MAP. 1. Coast line of Southern Posilipo.

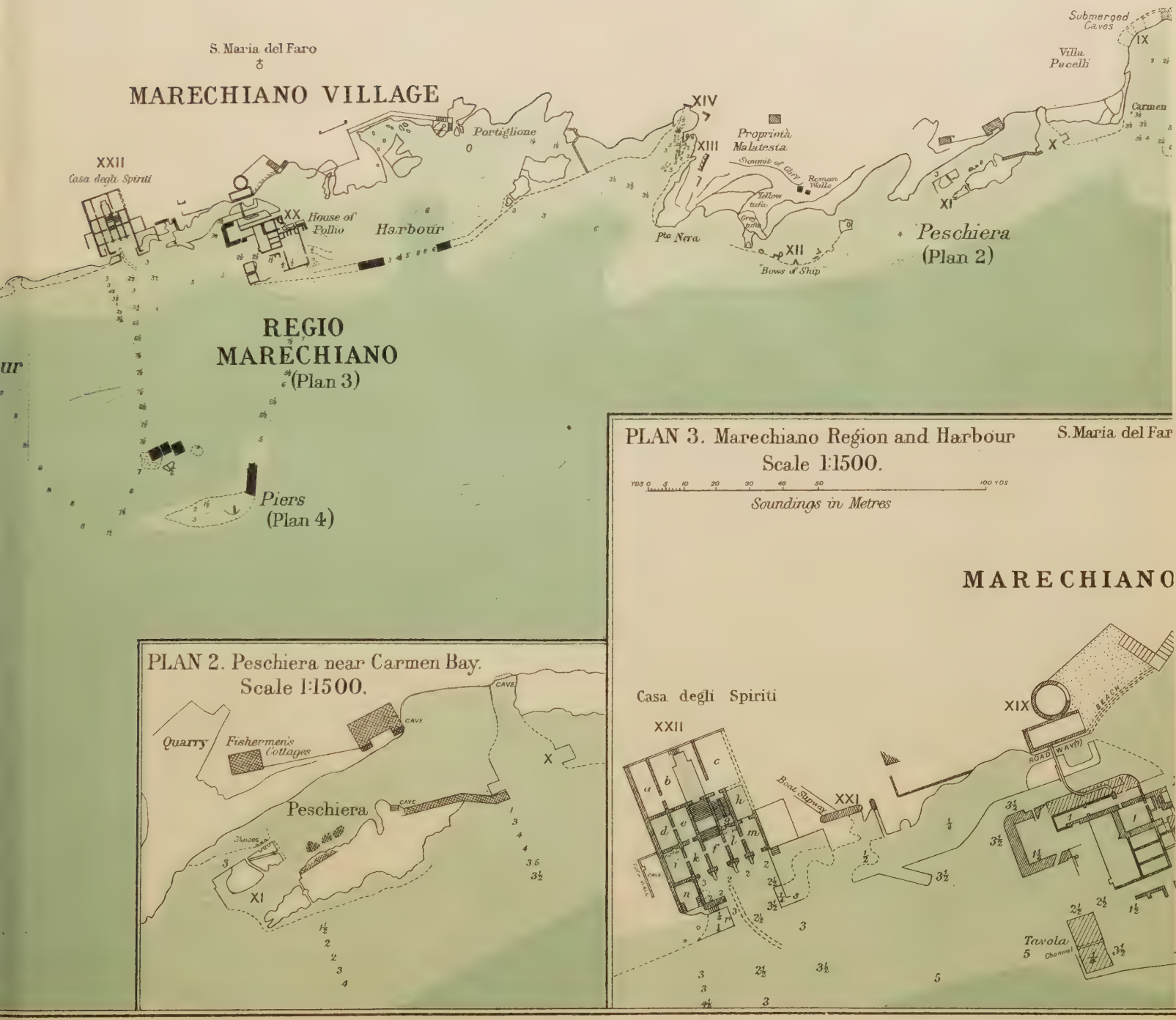
Showing the conjectural extent of the ancient foreshore and of the submerged buildings.
Reduced to an approximate scale of 1:4000 from an original survey by R. T. Günther.

YDS 0 10 20 30 40 50 100 150 200 YDS

Ancient foreshore
Depth 5 metres and over
Soundings in metres

R. T. Günther, mens.

C. F. KELL & SON, LITH.



PLAN 3. Marechiano Region and Harbour
Scale 1:1500.

YDS 0 5 10 20 30 40 50 100 YDS

Soundings in Metres

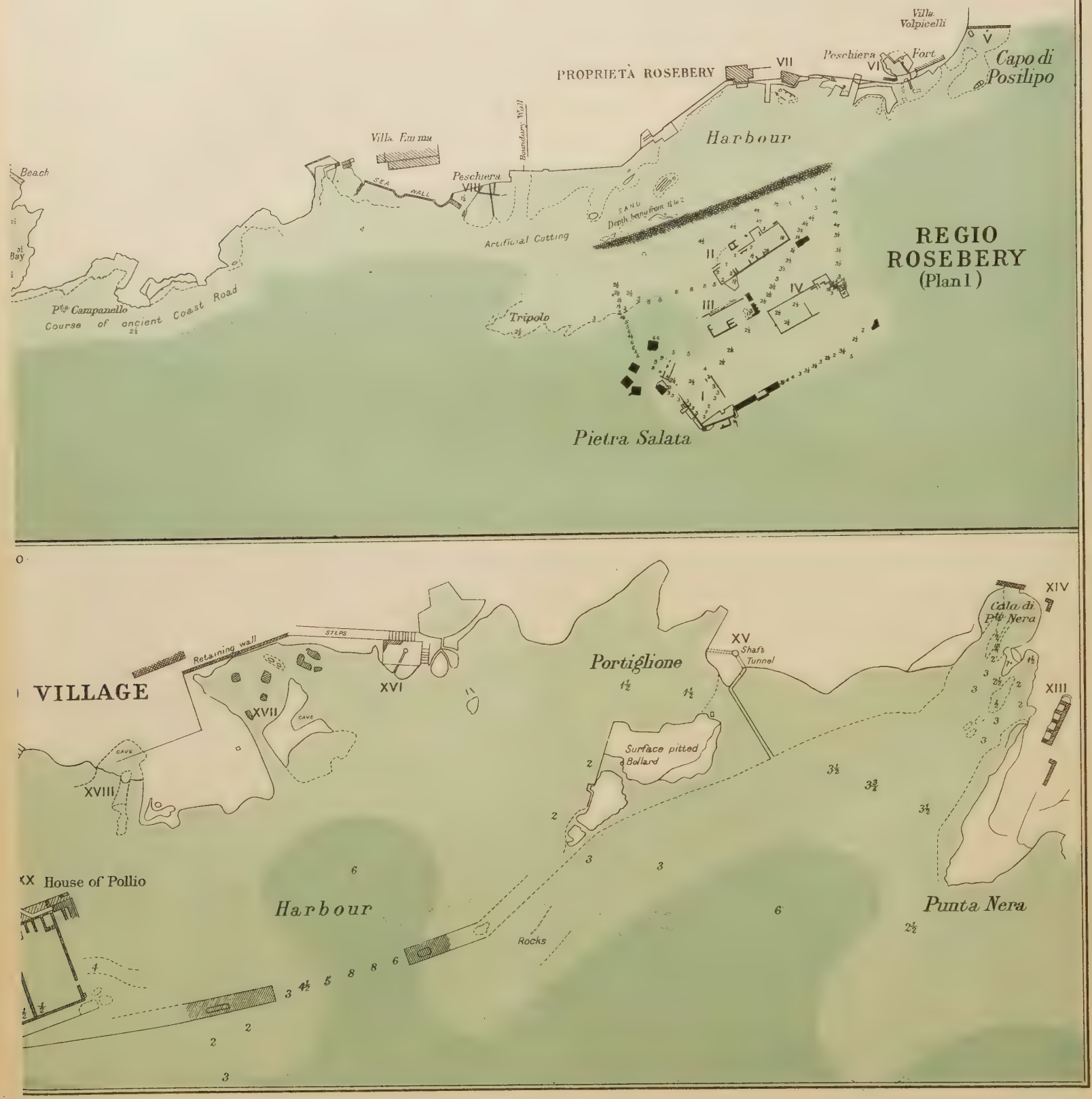
S. Maria del Far

MARECHIANO

PLAN 2. Peschiera near Carmen Bay.
Scale 1:1500.

A SUBMERGED GREEK AND ROMAN FORESHORE NEAR NAPLES.

Published by the Society of Antiquaries of London 1903


Villa Volpicelli
V
Peschiera
VI
Fort
Capo di Posilipo
PROPRIETÀ ROSEBERY
VII
Harbour
Boundary Wall
Villa Emma
Beach
Peschiera
VIII
SEA WALL
SAND
Depth bared from ½ to 2
Artificial Cutting
REGIO
ROSEBERY
(Plan I)
Bay
Pta Campanello
Course of ancient Coast Road
Tripolo
II
III
IV
I
Pietra Salata
O
VILLAGE
Retaining wall
STEPS
XVI
XVII
CAVE
CAVE
XVIII
Portiglione
XV
Shaft
Tunnel
Surface pitted
Bollard
Cala di Pta Nera
XIV
XIII
XX House of Pollio
Harbour
Rocks
Punta Nera

to derive its name from an ancient temple to Fortune, somewhere near. This temple may have occupied one of the foundations of the Rosebery Region.

Foreshore between the Rosebery and the Marechiano Regions.

Between the Rosebery and Marechiano Regions no conspicuous ruins of Roman buildings have remained, but such traces as we have been able to discern will now be described in topographical sequence (Map 1).

In several cases we have found that the last parts of a Roman house to disappear are the *cuniculi*, which were hollowed out in the rock under the foundations; and although we cannot assert that every *cuniculus* indicates a villa, yet most of them do. In some places these rock-hewn passages are entirely submerged, but when they are only partially filled with water they are frequently used by fishermen as live boxes for their fish.

The channels which conduct fresh sea-water into the Peschiera of Villa Emma[a] (**VIII.**) may partly be such submerged *cuniculi*, a speculation which receives some support from an eighteenth-century engraving[b] showing ruins standing in the water upon the rocky ledge now traversed by the channels. The ruins were probably demolished when the sea-wall of lava ashlar was built.

Along the rocky stretch of shore between Villa Emma and Carmen Bay, we have not been able to recognise any vestiges of ancient buildings above or under water. However, in many places the rocks have been quarried straight down to a flat shelf at the edge of the water.

Carmen Bay or Cala Garofalo[c] is the largest of the coves along this shore. In the western side, beneath a picturesque overhanging growth of aloes and mesembryanthemum, two artificial caves of nearly equal size are excavated in the yellow tufa[d] (**IX.**). A passage at the back places them in communication with one another and with the beach. Part of the floor of the caves is 3 feet under water, but judging from the weathering of the rocks on either side of the entrance, the caves were ancient enough to have been quarried high above water.

[a] The Casa Cannonnate of Italian Admiralty charts. According to a tradition, Lady Hamilton lived here, and the Peschiera was designed by Prince Luigi.

[b] In the author's possession. It is dedicated to the Chev. Destournelles, and was probably engraved by A. Cardon, after a drawing by Bracci.

[c] Wrongly named Zaffarana in the *Carta topografica ed idrografica dei contorni di Napoli* (1818) of the French engineers, in which the name C. Garofalo has got adrift.

[d] The southernmost is 16 feet high, 42 feet broad.

A few yards beyond the western point of Carmen Bay and in front of two old labourers' houses lies a low rocky reef traversed by artificial channels, the sides of which still show grooves into which sluice-gates must once have fitted (Plan 2, **XI.***). We have no hesitation in identifying these structures as having belonged to fish-tanks, but as the water now ebbs and flows above the old partitions between the channels and tanks, it is clear that the Peschiera, although still an elysium for crabs and shellfish, has sunk below the level best suited for its purpose. On the side towards the sea was a strong wall. We have no record of this Peschiera, but we consider it modern and in use as recently as the Bourbon times, for the grooves for the sluice-gates are in a good state of preservation, and at the high Roman land-level the bottoms of the fish-tanks would have been dry. It is quite possible too that this Peschiera was constructed upon the site and partly from the materials of Roman ruins, and we find artificially cut rocks (**X.**) in the deeper water near the east end of the wall, which seem to preserve the outlines of the ancient building.

The headland of the Proprietà Malatesta is the most conspicuous on this coast, and is a well-known landmark for the fishermen. Under the much weathered cliffs of yellow tufa is the flat rocky ledge (*g*, fig. 7) to which the reader's attention has already been directed, and over which, as we believe, the coast road formerly passed. Below the eastern angle of the headland the submerged margin of the ledge shows many signs of having been formerly built upon (**XII.**). One remarkable submerged structure is the relief like a Λ cut upon the rock and commonly known as the "Bows of the Ship" by the fishermen, who have a tradition that it is the mark of a vessel which once ran ashore here. It is the last remnant of a foundation. Upon the crumbling cliff above, other vestiges show where a Roman house has been undermined, but from the scanty remains it is well nigh impossible to ascertain the scale of the original buildings, but that their magnificence must have been in keeping with the situation is clearly proved by the innumerable mosaic cubes and tiny fragments of fine coloured marbles which may still be picked up upon the beach, although such fragments are not to be found upon beaches a few yards distant on either side. "Und so sehen wir denn, wie die Welle vor unsern Augen mit den Herrlichkeiten der Vorwelt spielen darf." (Goethe, February 24, 1787.)

The House of the Cala di Punta Nera (**XIII.**) stands on the western side of the Malatesta headland overlooking the entrance to the little cove. Four vaults and fragments of walls still remain, and other ruins and a vault may be seen near the head of the cove (**XIV.**, Plan 3).

Within the Cala di Punta Nera a large rock (*r*) stands severed from the cliff, suggesting that the passage between the two was hewn through to permit the ancient coast traffic to pass inside, and thus avoid an exposed dip in the ground at the mouth of the cove.

II.—The Marechiano Region.

The point on the west of the Cala di Punta Nera is neither as high nor as prominent as the one on the east, but it is prolonged seaward for a considerable distance as a long low reef, sheltering the Portiglione. These low rocks bear many traces of Roman workmanship. (Plan 3.)

Near the cliffs is a round vertical hole (**XV.**), close on 5 feet in diameter, like the shaft of a well, and with water at the bottom: two horizontal tunnels open on its west and south-east sides. At present these tunnels are half submerged, the eastern one being 3 feet below water and $1\frac{1}{2}$ feet above water, and the western, which is 6 feet high, being half in and half out of the water. The eastern tunnel is in connection with an artificial channel cut across the surface of some submerged rocks to the south-east.

Evidence is lacking which would enable us to assert positively the purpose of these tunnels and channel, we can only say that we have found essentially similar submerged rock-hewn passages in Trentaremi Bay and near Casa Marotta.

In their general proportions they resemble the *cuniculi* which have been described in many ancient sites. Those at Cervara are believed to have been used for the storage of water, "round shafts being cut at intervals, so that the cisterns should be accessible from above."[a] But so far as our experience of seaside houses goes, no one explanation seems to suit all cases.

The end of the reef is the eastern starting point of the breakwater and sea-walls of the harbour of Marechiano. From here to the southernmost point of Posilipo stretched an almost uninterrupted series of Roman houses, harbour works, and other remains at so low a level as to completely demonstrate the subsidence of this part of the coast. And it is a matter of surprise that the exploration and description of the region should not have been undertaken long ago, especially when we remember that so great an authority on local antiquities as Maza lived here, and is buried near the north wall of the village church, which he enlarged.

The little village of Marechiano is situated on the top of the cliff, but, as

[a] Ashby, *Campania*, 141, 160.

at Sorrento, many considerable buildings existed under the cliffs on the shore. We may judge of its size by the requirements of the ancient population, indicated as they are by the large water reservoir which exists in a good state of preservation beneath one of the farmhouses and vineyard in the village.

Behind the village is the little rococo church of S. Maria del Faro, the picturesque bell tower of which is a conspicuous landmark (*i*, fig. 7).[a] According to a tradition it occupies the site of the ancient lighthouse from which the local Virgin has taken her name, and the many bits of Roman walls show that it has not been founded upon any new site. There are certain ancient charters which prove that the name of the church is at least as old as the days of King Robert. For instance, we read in one document: "petia una terra sita in villa Posilipi, in loco ubi dicitur S. Maria de Faro."[b] And in another: "S. Stratum seu ad Sanctam Mariam dellu faru, seu ad marum planum."[c]

We have therefore no hesitation in agreeing with Fabio Giordano in his belief that the church was named after an ancient lighthouse:

> Pharus quoque turris, qua accensis noctu lampidibus navigantes itineris admonerentur, in cuius reliquiis sacellum B. Mariæ conditum phari nomen accepit. (Fabio Giordano.)

But we do not consider it proved that, in the first instance, the sites of church and lighthouse were identical or even adjacent. A light placed up on the hill at night might indeed show the mariner where the village was, but it would not be a safe guide when he wished to steer his way between rocks at the entrance of a harbour down below. It is far more probable that the original pharus was situated nearer the entrance to the harbour upon one of the rocks which, though now submerged, was above the surface when the Roman harbour was in use; and when the rocks sank so as to render that position impossible, its place was taken by another structure further inland, and in this way the church of S. Maria del Faro may have come by its name.

On a calm day the limits of the harbour of Marechiano are not easily discernible, for the outer rocks and walls of concrete are submerged, but when the sea is rough a curved line of surf indicates their position. Like a fringing coral reef these harbour defences enclose a pool of tranquil water. On the south and west the enclosure is completed by ancient moles. The east barrier, about

[a] A rough but accurate sketch has been used to illustrate the *Collina di Posilipo*, pl. 26.

[b] Giustiniano, *Regist.* 1317, C. fol. 211.

[c] Chiarito, *Commento sulla constituzione di Federico II.* par. 3, p. 2, pg. 173.

16 feet wide and 55 yards long, has been partly built upon, partly shaped out of the reef of tufa running out from the Cala di Punta Nera. On the other side of the entrance, 38 yards in width and 26 feet at its deepest part, is the west barrier, which starts from a flat rectangular mass, either of rock or of concrete, known as "la Tavola," just off the south-west corner of the House of Pollio.

With the land at the Roman level, the water within the barrier would become very limited both in depth and extent, but there would still have been over a fathom of water at the entrance. Owing to the fact that the harbour defences are continuous instead of being an interrupted *opus pilarum*, as is more usual on the Campanian coast, the harbour has become silted up to a considerable extent.

It is interesting to find that the barrier is of almost exactly the same width as that of the Greek harbour at Modon, as described by Blouet,[a] viz. five metres, but we are not prepared to give any reason for believing that the continuous type of mole construction was more ancient than the interrupted type, of which we have discovered a good example in the harbour of Pausilypon.

At the Roman land level the top of the sea-wall would have been high above the water, like the sea-wall depicted in the fresco shown in fig. 2.[b]

The most important ruins within the harbour (**XX.**, Plan 3) are those which are associated with the name of Vedius Pollio,[c] and which are commonly explained as ancient fish stews.[d] Local traditions about Pollio, however, may not be more reliable than those about Virgil, and so the identification of these structures should be received with caution. On the other hand the evidence afforded by adjacent submerged structures tends to show that it is very probable that these so-called fish-ponds, when built, must have been high above the sea-level, and could therefore only have been kept supplied by artificial means. This alternative is so improbable that we cannot but believe that here we are dealing with the lower parts of the walls of an ancient house which originally stood above the sea, but subsequently sank so low that later generations could adapt it for pisciculture. The ground plan is not an uncommon one for a Roman house, and consists of a number of small rooms grouped round a court. The restoration of the plan which has been attempted by Mazois[e] seems to us to have been prepared from

[a] *Expédition scientifique de Morée*, vol. ii. pl. 15, figs. 2 and 3.

[b] Roux ainé, iii. pl. 13.

[c] Wrongly named "Spiriti" in the *Carta topografica* of 1818.

[d] A slab of perforated marble was found here which was believed to be part of he apparatus for fish culture. I have not seen it, and can therefore express no opinion about its date.

[e] *Les Ruines de Pompéi*, Paris, 1838.

erroneous measurements and on the supposition that the house was originally symmetrical, which does not appear to have been the case.

Just behind the House of Pollio at the end of the fishermen's beach is an ancient building (**XIX.**) in a remarkable state of preservation considering its position on the edge of the water. Owing no doubt to the protection afforded by the ruins in front of it, there still remains a circular room with a floor at about 6 feet above the present sea-level, and a rectangular chamber behind. The vaults over both apartments are *in situ* and are used by the fishermen for spreading their nets. The form and arrangement of the rooms is very like that of the two principal rooms of the baths called Tempio di Mercurio at Baia.

Further west the rock has been cut away to form a low platform, upon which foundations are still traceable.

Beneath the village are many signs of ancient work. The flooded cave[a] (**XVIII.**) with two entrances marks the site of a house. Many fragments of masonry lie in the sea below the old retaining wall (**XVII.**), a passage or cave has been cut through a rock near by; and further east at the foot of the old descent leading down from the village to the sea are some remarkable channels cut in the rock. Their secluded waters are now used by laundresses, but they originally belonged to an ancient building of which traces (**XVI.**) are discernible on the neighbouring rocks, and have doubtless served the purpose of fish nurseries in more recent times.

The Casa degli Spiriti[b] (**XXII.**) is the most perfectly preserved Roman house on Posilipo. It stands in front of a *pozzolana* quarry, and being remote from any road is but rarely visited. It is of interest therefore to note that Sir Walter Scott was taken to inspect its ruins on January 26th, 1832, by Sir W. Gell, and we borrow our preliminary description from one of his contemporaries:

> A story existed that out of an opening in the floor of one of the rooms in this villa a spectre robed in white occasionally appeared, whence the place had acquired the name of La Casa degli Spiriti, and none had presumed to inhabit it. The fact was that a third storey had been built upon the Roman ruins, and this being only inhabited by paupers had fallen into decay, so as to endanger one angle of the fabric, and the police, for fear of accident, had ordered that it should remain untenanted. [The house is situated upon a rock projecting into the sea, but attached on one side to the mainland.][c] An

[a] The floor is now submerged to a depth of 5 feet. An illustration is in *Collina di Posilipo*, pl. 27.

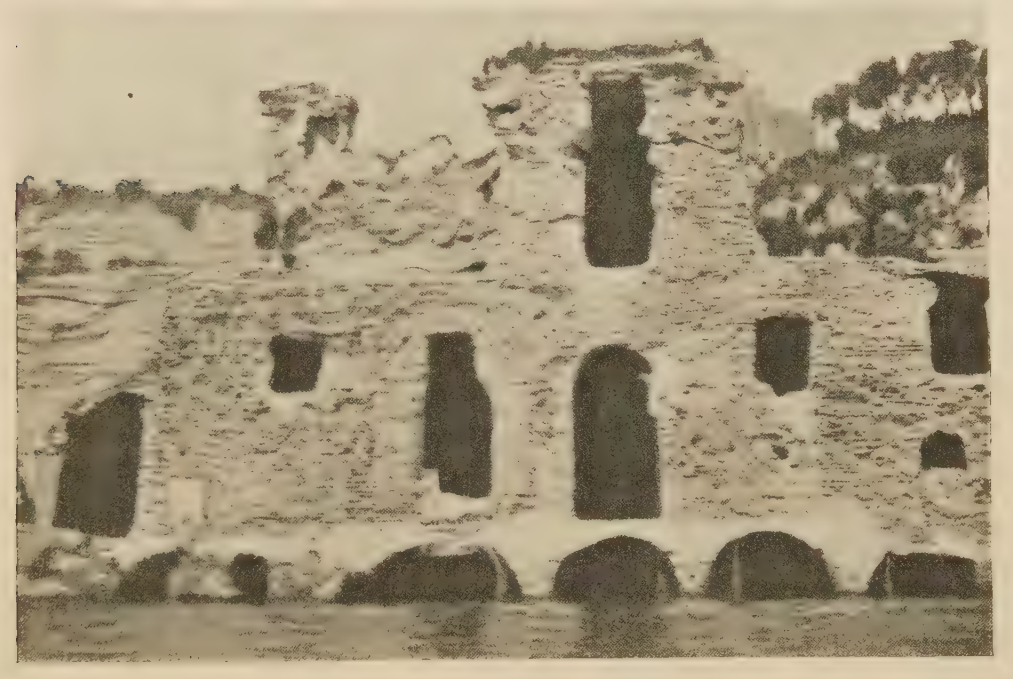
[b] *Not* the "Spiriti" of the *Carta topografica*.

[c] The sentence within brackets is not an accurate description.

entrance for a boat has been left in the basement storey, and it is probable that a sort of open court, into which the sea enters at the back of the house, and in which is the staircase, was constructed for the purpose of cooling the apartments in the heat of the summer, by means of the perpetual heaving and sinking of the ocean, which takes place even in the calmest weather. The staircase was too much ruined for Sir Walter to ascend with safety, but he appeared satisfied with what he saw, and took some interest in the proofs which the appearance of the *opus reticulatum,* high up in the external walls, afforded of the antiquity of the place.[a]

We cannot, of course, accept the ingenious explanation for the presence of water in the lower storey, because we have convincing proof of the subsidence

Pozzolana Quarry.



Cave.

Fig. 5. Casa degli Spiriti. (XXII.)

of the building in the fact that ancient plaster, such as is only applied as a covering for dry walls, still adheres to the basement walls below the water. In front of the house and completely submerged is an artificially-formed terrace, with a flight of steps, which must have once been above water.

The accompanying illustration shows that the heads of the doorways and windows were originally semicircular, but in later times repairs and additions

[a] Essay by Mr. M. Hamilton, in *Transactions of the Royal Society of Literature*, 1837.

were executed in rough rubble masonry; on the first floor the large round-headed windows were filled up and others smaller and square-headed were inserted in the old arches.

From these alterations we learn that an attempt was made to render the ancient building serviceable under new conditions. Evidently the first-floor rooms, being very low down, were liable to be swept by heavy seas; the inmates seem therefore to have caused the lower parts of the windows to be blocked up, and to have admitted light through more elevated apertures. Early documents tell that the building was used as a tavern, and was frequented by water parties, and it is very likely that the restoration of the upper portions of the building was undertaken for this purpose.

The water being from 6 feet to 8 feet in depth over the basement floor of this house, the rooms must be visited by boat. In the front facing the sea there are five rooms, of which the middle room (*f*, Plan 3) is a passage leading through the house into a court behind, now open to the sky. These rooms all open on to a lower terrace or "area," which has been cut out of the rock down to the level of the basement; it is also submerged. On the south-west side a small flight of steps or incline leads to an upper terrace (*r*), and perhaps was balanced by a similar flight leading to the terrace on the eastern side of the house, but this has been washed away. Across the middle of the area runs a channel, which may have been a drain.

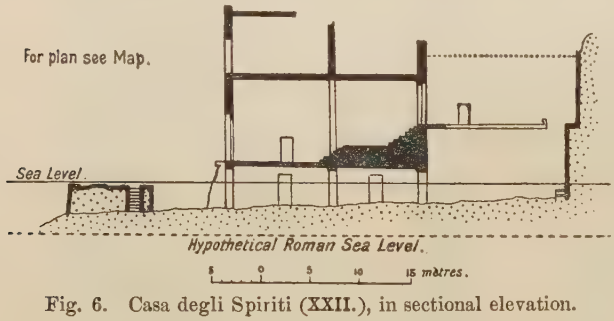


Fig. 6. Casa degli Spiriti (XXII.), in sectional elevation.

On the first floor the plan of the basement was followed: a central hall (*f*) and staircase, and, in front, two rooms on either side of it. One room (*i*) was dark and had no window. In the other three (*k*, *l*, *m*) the windows had been altered in the manner already described.

The balcony, which once connected the two rocky terraces (*r*, *s*) and gave access to the central doorway, seems of post-Roman date, to judge by the scanty remnant, but in all probability it replaced a more ancient one. At the western side of the house is a cave, partly hewn in the tufa, partly covered in with masonry. At the back of the building there were apparently three courts (*a*, *b*, *c*), but they are not very easy to make out. They were covered in, during Roman times, the roof being supported by the cliff behind.

The upper storey, like the balcony, is of post-Roman work.

Another chapter in the remarkable history of this house is indicated by the line of erosion which runs all round the house, but which may be most clearly seen on the *opus reticulatum* inside the easternmost room, at a height of 16 feet above sea-level. This shows that the house has been 16 feet *lower* than now.

III.—The Gaiola Region.

From the Casa degli Spiriti to the Cala di Trentaremi there is hardly a square yard, on the cliffs as well as on the shore and under the water, but bears traces of Roman building. Fortunately there are still preserved to us some

Fig. 7. Site of Pausilypon Harbour.
The Roman breakwater lies submerged at k.

a Cala di Gaiola.
b Submerged ruins (XXV.) under Marotta Headland.
c Cala di Lampi.
d Cave.
e House of the Three Buttresses (XXIII.).
f Upper storey of Casa degli Spiriti.
g Malatesta Headland.
h Marotta House.
i Tower of S. Maria del Faro.
k Breakwater (submerged).

buildings which, owing to their massive walls or sheltered position, have escaped the ravages of time and of the unprincipled treasure hunter, who in ruthless searches has satisfied his greed for ancient vases and other antiquities at the expense of the more important buildings which contained them.

In consequence of the slope of the southern part of Posilipo the natural

drainage channels run from north-west to south-east, diverging but slightly from lines parallel to the precipitous cliffs in which the promontory abruptly ends. The land between these south-western cliffs (Cape Coroglio) and the higher ground behind Marechiano is drained by two valleys, the Vallone di Gaiola and the Vallone di Lampi, which taking their sources west and east of the Sans Souci property,[a] reach the sea in two little coves west (*a*) and east (*c*) of the Marotta headland (*b*) (fig. 7).

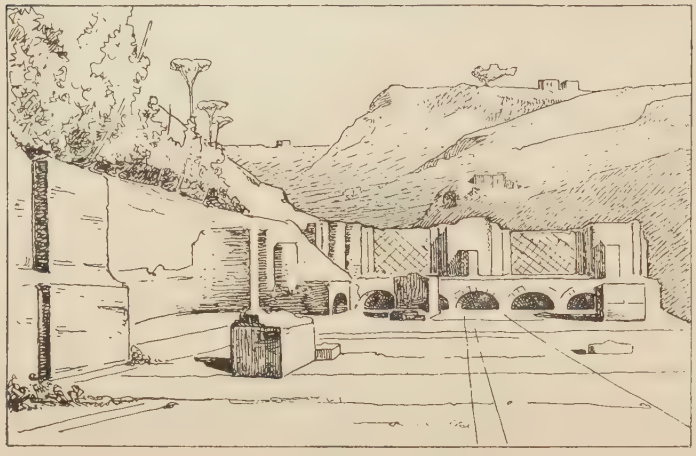


Fig. 8. The Temple, Gaiola Region.
(*From Collina di Posilipo.*)

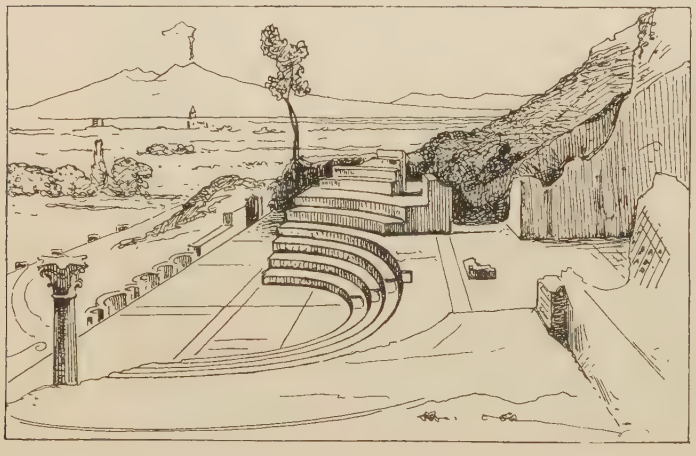


Fig. 9. The Odeon, Gaiola Region.
(*From Collina di Posilipo.*)

It would be foreign to our present purpose to describe in detail the group of sumptuous buildings which crowned the heights overlooking the Cala di Trentaremi, and from which the view of Cape Coroglio, Nisida, Cape Misenum, and Ischia is one of the most charming in all the Campi Phlegræi. We wish merely to lay stress on the fact that the existence of ruins (figs. 8, 9, 10)[b] of a theatre, an odeon, a temple upon these heights as well

[a] Formerly Proprietà Lancellotti, but now in possession of our popular countryman Mr. Walter K. Strickland.

[b] The plans of these buildings, which are shown in Map I. and Plan 6, have been copied from the plate in Fusco and Giampietri, *Giunta al Comento critico-archeologico sul frammento inedito di Fabio Giordano*, 1842, which plate was again published by L. Lancellotti, *Promenade à Mergellina Pausilype*, and reproduced by Wieseler, *Theatergebäude* (Göttingen, 1851), plate ii. fig. 9 A, B. The plan of the semicircular *belvedere* (?) over the cave in Plan 5 is original. Upon its semicircular wall stood pillars like those of the building shown in the fresco representing Dædalus and Icarus. *Cf.* Roux iii, pl. 2. Figs. 8, 9, and 10 have been redrawn from the plates in *Collina di Posilipo.*

as of the noble Grotta di Sejano proves that those who resided at the end of Posilipo were men of no ordinary stamp, and men who would not have been likely to forego any convenience that wealth could provide. A discussion as to whether or no these imposing buildings all formed part of the Pausilypon, the private villa of Vedius Pollio,[a] is unnecessary here, but it is needful for us to bear them in mind when we wish to understand the relation and due proportion of the ancient buildings along the seashore, the remains of which we are about to describe.

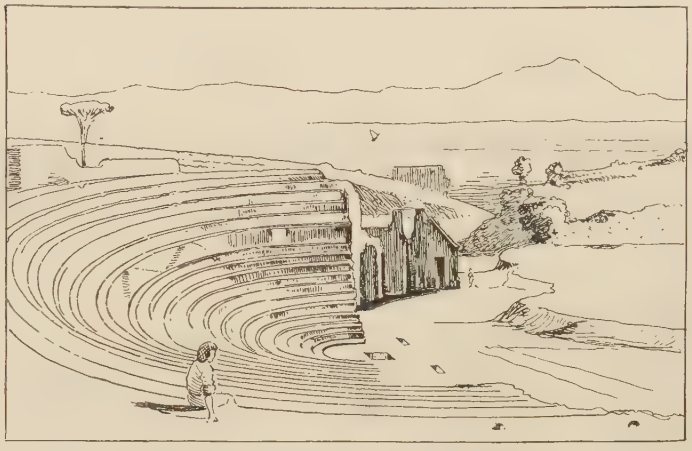


Fig. 10. The Theatre, Gaiola Region.
(*From Collina di Posilipo.*)

THE ANCIENT HARBOUR.

Extending in a line parallel to the shore, and distant some 80 yards from it, are structures which the local fishermen from time immemorial have regarded with mixed feelings. For in stormy weather they are natural dangers to be given a wide berth, yet in calm they form a happy hunting ground for *frutti di mare*. Over those nearest to the surface there is less than 1 foot 6 inches of water, but others are 12 feet below.

On closer examination it is easy to see that these "*chiane*" or "shoal rocks" are arranged in a row in line with, and at the further extremity of some submerged ruins nearer the shore, that they are square in section, and that they rise from deep water at nearly equal intervals. They are as obviously artificial as the piers which we have described in the Rosebery Region. But the situation, number, and linear arrangement of the Gaiola piers suggests that they ought rather to be compared with those forming the protective breakwaters, or *opus pilarum*, of the ancient harbours of Puteoli, Misenum, and Nisida.[b]

[a] Beloch, *Campanien*, 86.

[b] Mommsen, *Inscr. Neap.* 2491; Jordan, *Archæol. Zeit.* 1868, pl. 11; Rossi, *Bull. Nap.* n. s. i. pl. ix.; Bellori, *Fragmenta vestigia veteris Romæ;* Roux ainé, iii. pl. 21; Fazio, *Intorno al miglior modo di costruire i porti*, and Fazio, *Nuove osservazioni*; Günther, in *Geographical Journal*, 1903, 269-275.

Wherever there seemed to be any danger of an artificial harbour becoming silted up with sand borne along by the littoral drift, the Campanians avoided continuous sea-walls and constructed interrupted barriers formed of separate piers rising from the bottom to the surface of the water. Currents could freely circulate

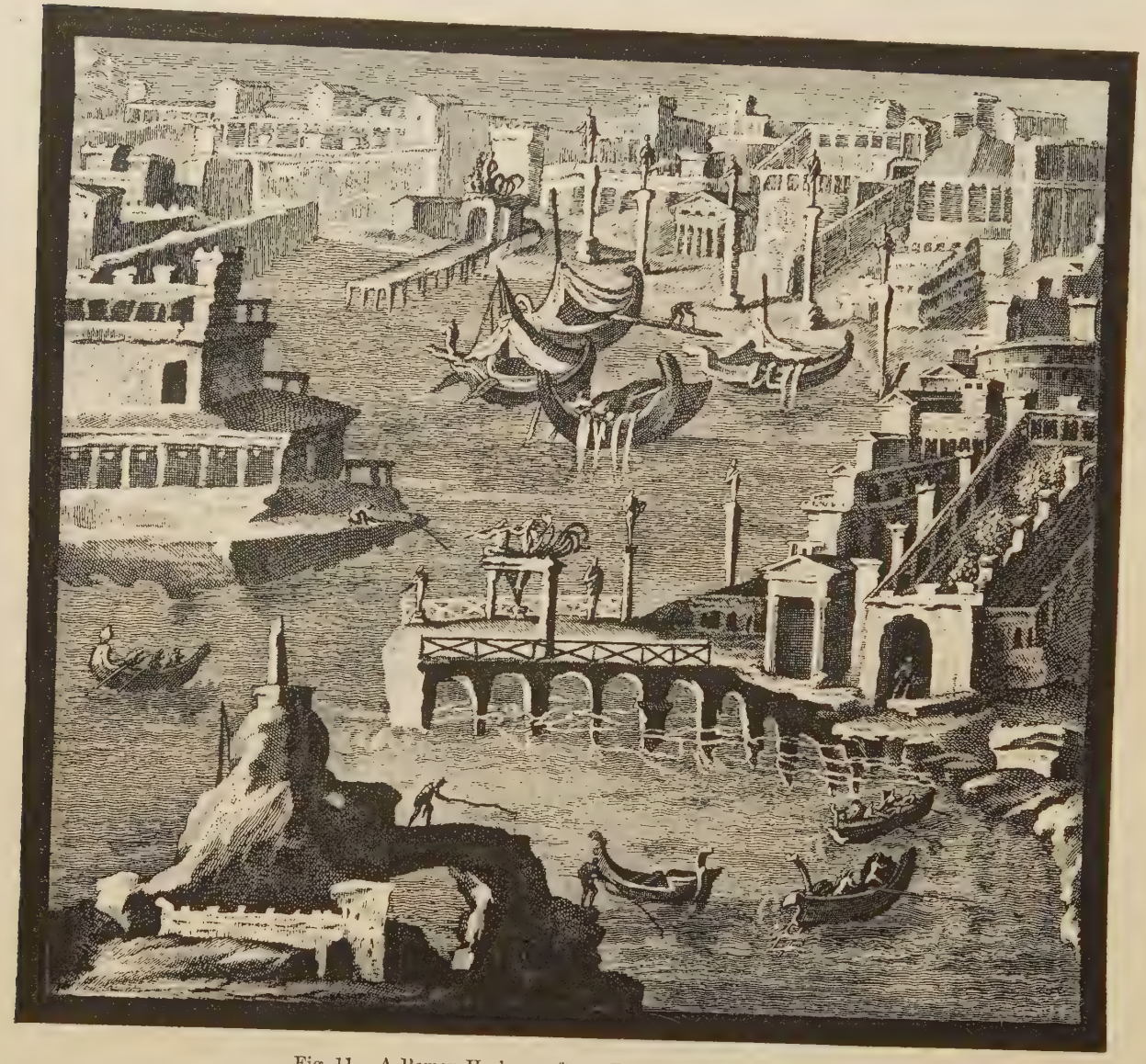


Fig. 11. A Roman Harbour, after a Fresco found at Gragnano.

around the bases of the piers and sweep the passages clear of any deposits of mud or sand which in the course of time might accumulate to such an extent as to choke up a closed harbour.

R. T. GÜNTHER, MENS

PART OF A SUE

C.F.KELL & SON, LITH.

IMERGED GREEK AND ROMAN FORESHORE NEAR NAPLES.

Published by the Society of Antiquaries of London, 1903.

The disadvantage of a continuous sea-wall as a harbour defence on this shore has been well exemplified in the case of the late Mr. George Rendel's harbour at Maraval, which becomes silted up so quickly as to require dredging every few years. The Roman plan has been so efficacious at Gaiola that the water within the outermost piers is still 26 to 30 feet deep. Such a harbour work was spoken of as an *opus pilarum*. The tops of the piers were sometimes connected by arches, forming a *progressus*,[a] as at Puteoli in the case of the Bridge of Caligula or in the harbour represented in a fresco unearthed at Gragnano (fig. 11).[b]

We were not able to distinguish any of those stone mooring rings[c] which Fazio found on the piers of the harbours of Nisida and Puteoli, and which may very likely have been the models of the stone rings to receive the masts of the *velaria* of theatres.

It is more than likely that this method of breakwater construction may have been introduced into Campania by the Greeks, together with so many other arts and customs. At Delos and at Eleusis there are said to be moles built upon this plan.

The Pausilypon harbour was well sheltered by land on the west and north, the piers protected it on the south, and the entrance faced east.

There are other constructions of a similar nature further out to sea. (Plan 4.)

Opposite the Casa degli Spiriti, and some 200 yards distant from the shore, a shoal is marked upon the admiralty charts, which on closer inspection we found to be a group of four piers. The three inner piers are rectangular, 12 feet in height, and rise to within 13 feet from the surface; the middle one bears traces of a superstructure which rises to within 8 feet from the surface. The piers are 5 yards square and they are about 1 yard apart. Some large blocks of stone or fragments of masonry, perhaps the debris of superstructures, lie at their foot. On the outside of these piers the fourth, irregular in shape, rises to within 8 feet of the surface from a depth of 16 or 20 feet. In the fresco from the House of Lucretius at Pompeii reproduced by Niccolini,[d] a woman is shown fishing from a group of piers which must have been like these.

Further out still is a long crescent-shaped rock of which the north-eastern end continues at a depth of 6 feet, as a broad sea-wall, in the direction of the "fish-tanks" at Marechiano. The highest point, near the middle of the shoal, and 5 feet below the surface, has been carved out in a rather peculiar manner

[a] Vitruv. v. 12.

[b] *Le Pitture antiche d'Ercolano*, ii. 295. Also *cf.* iii. 47.

[c] Günther, *loc. cit.* figs. 12 and 15.

[d] *Case ed i Monumenti di Pompei*, pl. iii. 1854-67.

to the resemblance of a tomb 12 feet long, which is girt about seawards by an irregular semicircle of round holes placed about 2 feet apart. The only explanation to be offered concerning them is that we have here the foundation of a superstructure, long since washed away. It is possible that an ancient lighthouse to show the entrance to the Pausilypon or Marechiano harbours once stood upon this shoal, then a rock well above water, just as the Lanterna marked the entrance to the Julian harbour, and it is also possible that this was the lighthouse from which the village church of Marechiano takes its name.

Along the shore inside the harbour stood several Roman buildings, of which traces are still to be seen on the cliffs and under the water.

On the point to the east of Cala di Lampi was a large house (Plan 5, **XXIII.**), of which the greater part of the ruins are some 15 feet above the present sea-level. It therefore probably stood about 30 feet above the Roman sea-level. The front of the house was supported by three buttresses against the rock, which are a conspicuous feature as seen from the sea. A winding passage, 6 feet high by 2 feet broad, and dipping from west to east, is tunnelled in the rock under the house. The bottom of the passage is 3 feet above the water at the eastern end of the house where it opens near the sea. The middle portion, with the rock in which it was tunnelled, has been washed away. The tunnel continues to the east, taking a downward course, and where we find it complete again, it is half submerged. The eastern termination nearer the Casa degli Spiriti is now entirely covered at high water, and is about 7 yards from the present shore.

The purpose of this *cuniculus* was a great puzzle to us at first. Originally it must have been well above the water-level, for it could not otherwise have been hewn through the rock, and it therefore affords another convincing proof of subsidence of the land. It seems unlikely that so large a tunnel or one apparently involving such unnecessary labour of construction would have been made for a drain. We believe it to have been intended as a private entrance to the house from the sea. Similar tunnels occur beneath many foundation sites (cf. p. 13).

A rectangular excavation has been cut in the submerged ledge of rock below the western end of the house (Plan 5, *c*).

Around the little beach of the Cala di Lampi there are several ruins of ancient buildings, but of greater importance for our present purpose are the submerged walls which stretch across the cove itself (at *c* in fig. 7), and indicate that the cove as we know it did not exist in Roman times, but that the bottom was dry, and that a house (**XXIV.**) stood there facing the old harbour. In the low cliffs to the east

and west of this house are two small partly submerged artificial caves (*d*, fig. 7), (Plan 5, C′, C″), of about 10 feet in height, which belonged to it. It is interesting to note that several of these Roman seaside houses were provided with artificial caves. A cave partly hewn out of the rock formed an annexe to the Casa degli Spiriti; and the house of Servilius Vatia, though probably on a much larger scale, was provided with two caves which were sufficiently noteworthy to be mentioned by Seneca.[a]

The Roman House of Marotta (**XXV.**) stood against the cliff at the end of the headland, at a lower level than the modern house (*h*, fig. 7), but all has fallen away except the northern margin of the chopped-tile floor of a first-floor room, which is partly imbedded in hard grey tufa, 10 feet above the water. The lower surface of the bed of the grey tufa, which attains to a thickness of 6 yards at this point, is raised about a fathom from the sea by the dense yellow tufa of Posilipo. Several large fragments of masonry lie in the sea below (*b*), as well as the foundations of the building, which probably stood at the head of the harbour.

Partly buried in the sandy beach of the Cala di Gaiola are the massive arched substructions, which we are inclined to associate with the road from the Grotta di Sejano.

THE GAIOLA ISLANDS.

We have now arrived at that part of the coast which has always had the greatest fascination for us, namely, the Gaiola islets and waterways. (Plan 5.)

The spot is one of classical association and great charm. There is hardly a rock but bears the mark of the Roman mason, and could only the sea-bottom be raised, many of its problems would be easily solved. At the present time, however, the superficial observer will note little except a few much weather-worn rocks which tell how thoroughly the forces of denudation have accomplished their work. Upon the larger of the two rock islands an Englishman has made his dwelling between the walls raised by a Piscicultural Association[b] which became insolvent. Since coming into possession Mr. Nelson Foley has thrown out piers to protect his landing-place in stormy weather, and has made other improvements which unfortunately sometimes conceal the ancient remains. Early in the nineteenth century

[a] Seneca, Ep. 55.6.

[b] Società della Pescicoltura del Regno d'Italia nel mar di Posilipo.

the two Gaiola islands were joined by a rocky arch (fig. 12),[a] which we believe to have been the roof of a large artificial cave or tunnel, like the tunnels cut

Fig. 12. Gaiola Island as it appeared early in the nineteenth century.

through the rocks of Badessa, and of the Lazzaretto di Nisida, and the one through a small rock at Torregaveta, frequently pointed out as an ancient bath.

The arch has now fallen in, and the islands are divided by a channel partly blocked by the debris. In the island which lies to the east of the channel are two partly submerged caves facing eastward; a wall stretches along the sea-bottom in front of their mouths and separates them from a deeper channel. Just within the entrance the two caves communicate by a narrow way cut through the rock.

From the southernmost cave[b] a submerged tunnel, 6 feet high, passes into the large cave (now channel) between the two islands. The floor of the cave is submerged to a depth of 6 feet, and the top of the tunnel is 1 foot 6 inches under water. Its walls show patches of plaster, its roof is rounded. At 6 feet below the surface of the water, a ledge or seat rather less than a yard wide runs along either side, at the west end these ledges rise by three steps to a platform about 4 feet under water. In the north wall is a niche 3 feet long by 8 inches deep. In the west wall is the tunnel already mentioned. (Plan 5.)

The northern cave, having been less eroded than the southern, retains more of the original plaster coating on the walls. We observed that here, as elsewhere on this coast, little or no erosion has taken place below the reach of the waves.

THE ISOLOTTI DI GAIOLA.

To the east of the larger islands are two weather-beaten rocks, the Isolotti di Gaiola. Except for the fact that the northernmost is traversed by an artificial

[a] The drawing has been made from an early water-colour sketch in the author's possession. The mountain shown in the distance to the left is Monte Solaro, in Capri. *Cf.* St. Non, *Voyage*, ii. pl. 63. A photograph of the Gaiola in its present state appeared in *The Traveller* for 13th July, 1901.

[b] The southern cave measures 65 feet long by 29 feet wide by 16 feet high.

cave,[a] still retaining traces of plaster, with a passage 4 feet deep by 3 feet broad leading south, these rocks do not show any trace of artificial work above water. Below the surface, however, the well preserved walls indicate that here was a rectangular building or buildings which in our opinion stood on the east side of a road which ran north and south.

The picture which comes nearest to our idea of what the Isolotti may have looked like before the buildings upon them were destroyed is shown in fig. 14.[b]

About 50 yards east of the Isolotti there is a shoal rock, just over a fathom deep, which at its south-west corner has been shaped to an obtuse angle. It appears to have been connected by dry land with the Isolotti, but it may also have stood out in the sea like the foundation of the building depicted in the fresco of Daedalus and Icarus in the British Museum.[c] Like it, the upper part of the foundation rose in steps.

THE GAIOLA CHANNEL.

The eastern entrance of the Gaiola Channel is marked by the modern wooden effigy of the fisherman's patron, St. Francis, which stands there watching a tiny basket at the end of a rod, into which those who have made a good catch place a small offering in kind as a mark of their gratitude to the saint who has smiled on their fishing. Such effigies are rare; indeed we are not acquainted with any other upon this coast, and we are tempted to see in this St. Francis a survival of the statue of Hercules (*cf.* fig. 2)[d] or of some sea-god, perhaps of Glaucus, Palemon, or of Neptune himself, who had a temple here. For the sake of comparison, we have reproduced a photograph of St. Francis looking at the sunken Isolotti (fig. 13), and a fresco of a sea-god near a square group of buildings such as may have crowned the Isolotti in Roman times (fig. 14). Our St. Francis may even be the Portunus still faithful to his sunken harbour of Pausilypon.

A remarkable ruin lies in the sea below St. Francis. The interior was built so as to form six semicircular niches, each measuring 6 feet in diameter, which appear once to have been vaulted over. One of the niches was fashioned in the short north-east wall turned towards Pausilypon harbour; five are ranged along

[a] 6 feet broad by 6 feet deep by 4 feet high.

[b] From *Le Pitture antiche d'Ercolano*, v. 104.

[c] *Arch. Zeit.* pl. 2, fig. 1.

[d] In Statius *Sylv.* iii. 1.68, there is a mention of a statue of Hercules by the harbour of Sorrento.

the south-east side of the fabric, which is 49 feet long. The southern angle is obtuse, so that the southern side lay parallel to the line of the channel and to the submerged walls opposite.

The plan of the building resembles that of the small temple near the theatre on Coroglio (fig. 8).

Capri.

Fig. 13. Statue of S. Francesco, facing the Isolotti di Gaiola, the site of ancient buildings (XXVII.).

There is a small vertical hole in the wall just outside the southernmost niche which goes at least as deep as the sea bottom (13 feet), and a horizontal channel

Fig. 14. Statue of a seaside Divinity, near a group of buildings of rectangular ground plan similar to that of the buildings which formerly stood on the Isolotti di Gaiola.

or passage of some 6 feet deep has been cut in the rock behind the fabric, 42 feet from the south-east face.

A similar horizontal cut in the rock, 60 feet long, may be seen behind the new sea-wall constructed by Mr. Foley to protect the anchorage of his launch.

The top of the walls are so near the surface as to be awash whenever there is a slight sea on; they rise up from a depth of 2 fathoms.

To the west of the House by St. Francis the submerged rocks skirting the shore have been artificially hewn straight. They rise from the bottom of the channel (8 feet) to within 2 or 3 feet of the surface. Beyond some steps and a slip-way in present use, the rocks become high, and show by their artificially cut ridges and flat surfaces that a building once stood against them in the channel.

The southern part of the ground plan of the Northern House of the Gaiola

Fig. 15. Northern House, Gaiola Channel (XXIX.).

channel (**XXIX.**) may be seen under 6 to 10 feet of water, and it is possible to make out the position of the entrances to two rooms (*b* and *c*, fig. 15); one

Fig. 16. Scuola di Virgilio (XXX.).

a Fluted pilasters. *b* Mosaic floor. *c*, *d*, *e* Ruins of Scuola. *f* Cliff above Grotta dei Tuoni. *g* Masonry shown to left of fig. 17. *v* Scoglio di Virgilio.

measuring 26 feet by 29 feet. Some ruins of the first floor rooms and a passage (*a*) are *in situ* on the rock above.

Nestling under the low cliffs at the western end of the channel are the most extensive of the remains of the Gaiola Region now to be seen above water (**XXX.**). Illustrations of these have frequently been published, but the best are in Paoli,[a] and have often been copied by his imitators. Tradition associates the name of Virgil with the ruins, and tells us that here was his school, hence the name Scuola di Virgilio, by which the group is known; but the early antiquaries, who saw in every partly submerged Roman building a Roman bath, labelled this group with the common name. Knowing, as we do now, that it must

Scuola di Virgilio (**XXX.**) (*g*).

Fig. 17. Gaiola Channel, looking east.

have stood some 15 feet above the sea-level, we can perhaps get nearer to the truth, if, judging from the position which gave it a view to the east down the channel between the other buildings, we suggest that it was either a *belvedere* or a temple. The building consisted of a square chamber, with a semicircular apse in the western side; a low and narrow passage led between the central chamber and the rock; the floor is surrounded by a channel. The eastern edge of the partially submerged ledge of rock on which the Scuola stands has been trimmed straight, and rises from 3 to 4 fathoms of water, and there are several vestiges of walls upon it. A bridge resting upon the wall in the middle of the channel may have given access to the building we have named the Southern House of the Channel (**XXXI.**).

[a] Paoli, *Antiquitatum Puteolis Cumis Baiis existentium reliquiæ*, 1768. D'Ancora, *Guida ragionata*, 1792.

Just off the Isolotti di Gaiola, and opposite to St. Francis, the top of a wall of concrete appears above the water (fig. 17, *a*). Below the surface, and rising from 16 feet, are structures in a straight line, which we believe to have belonged to the northern walls of buildings on the Northern Isolotto, perhaps of **XXVII**.

At the north-east corner of the larger island, the little modern sea-wall rests upon an ancient foundation, lying north and south.

Traces of other foundations occur in the shallow water of the channel, further west. The largest is that of the Southern House of the channel (fig. 17, *b*, and Plan 5, **XXXI**.), which stood opposite the Northern House, and seems to have had an entrance from the west, where steps may possibly have led down to the water.

SOUTH END OF ISLANDS.

At the south-east corner of the island there was a house of five or six rooms on the ground floor, ending to the south in a strong angular buttress, which may have served as foundation to an upper storey (**XXXII**.). Near by an artificial cave, at least 12 feet long, had been hollowed in the rock of the island, but unfortunately the greater part of the roof fell in during a storm in 1899. The building was approached by a pathway that led between the Isolotti and the island. At about 25 yards to the west of the house there is a rectangular pier awash, off which the soundings deepen to 4 fathoms, so that the pier must have been just beyond the ancient shore, and may have supported a little temple or pavilion in the sea.

The situation of the buildings of the Gaiola promontory was one more than usually exposed to the onslaught of the waves, and we must perforce inquire how these Romans protected their seaside villas, seaside in the most literal sense of the word. A few more soundings made not 50 yards from the buildings reveal the secret. To the south-west, a rock or mass of concrete, the Scoglio Traverso of the Italian charts, rises to the surface, and from it starts a wall which runs eastward, at a depth of from 6 to 10 feet, and, after coming once more to the surface, continues for a considerable distance.

With the land at a higher level this structure would have been a sea-wall, and we believe the area it sheltered to have been principally dry land.[a]

[a] The condition of things must have closely resembled the fresco depicted in Roux ainé, iii. pl. 28.

Still further to the south-east additional protection was afforded by a shoal now 16 feet under water which extends for about 270 yards. We find upon it many rocks presenting in their straight-cut edges traces of the handiwork of man; beyond this, and about a quarter of a mile from the island, is the Cavallara Shoal of which the rocks though at the same depth as those of the former shoal, and therefore in Roman times level with, if not well above the surface, have no apparent traces of having been quarried or built upon.

Our survey notes of these further shoals have unfortunately been rendered useless by the fact that the officers of the port had shifted the gas-buoy from the moorings as marked in the charts. In Maps 1 and 2 we have therefore reproduced the five-metre contour line as given in the Italian chart.

Our reasons for believing that in these submerged ruins of the Gaiola Region we have the remains of Roman buildings which were erected upon the site of the Greek Parthenope or Palaepolis, have already been stated in the introductory paragraph.

SCOGLIO DI VIRGILIO.

The pointed headland, the Scoglio di Virgilio (*v.* fig. 16), between the Gaiola and the Cala di Trentaremi, is so like the beak of a trireme that it is frequently assumed to explain the name of the bay, and has given rise to a tradition which ascribes its fantastic shape to the magic of the supposed necromancer Virgil.[a]

On the top of the Scoglio di Virgilio there are many fragments of walls (**XXXIII.**) and marble pavements and the lower portions of two plastered fluted pilasters (near *a*, fig. 16), the remains of a building which stood in a position of incomparable beauty, and which may once have been connected with the "Scuola" beneath. Some idea of the ornate character of the building is afforded by a fragment of a terra-cotta tile, 1 inch thick, perhaps a portion of a frieze, and ornamented with a flowing honeysuckle ornament crossing a fillet in fairly high relief, which was found here and is now in the possession of the author; and also by the stucco on one of the walls which still showed a wheat-ear pattern painted in green and cream upon a black ground.

Behind the House of the Scoglio di Virgilio is a semicircular excavation quarried in the tufa which would not call for especial remark were it not for the

[a] The story about Virgil and the Posilipo tunnel has been reproduced by Leland in his collection of *The Unpublished Legends of Virgil*, 1899.

PLAN 6. Plan of Quarry Caves and of the Tavola di Mare.

Scale, 1:1500.

The caves are shown in horizontal section. Soundings in metres. Dry caves shown white. The positions of the theatre and odeon are approximate.

R.T. Günther, mens.

C.F. KELL & SON, LITH.

PART OF A SUBMERGED GREEK AND ROMAN FORESHORE NEAR NAPLES.

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fact that in its floor, the height of which varies from about 2 feet to 6 feet above the water-level, we found a circular shaft a yard in diameter, plastered internally with smooth hard cement, with water at the bottom. Further examination showed that the sea enters the bottom of the shaft by a horizontal passage or *cuniculus*, 6 feet high, cut through the rock, entirely filled with water, and we could only discover its extremity with difficulty at about 15 feet below the surface of the water, 52 feet from the shaft and 16 feet from the rock-face east of the Grotta dei Tuoni.[a] It seemed to us that the *cuniculus* was also continued in an easterly direction and possibly as far as the Scuola, 25 yards distant on the other side of the headland.

On the higher bluffs which overlook this is the noble group of buildings of the so-called Villa of Vedius Pollio, or "Pausilypon."

CALA DI TRENTAREMI.

At the Cala di Trentaremi is a bay which has probably been much enlarged by the digging of *pozzolana*, now much used, as it was in Roman times, for making mortar. East and north the Cala is surrounded by the precipitous cliffs which, rising as they extend westward, eventually culminate in Cape Coroglio.[b] The western side is formed by a long narrow promontory of irregularly bedded tufa, the "Cavallo," at present used as a quay, alongside which the pozzolana-boats lie while receiving their cargoes. The bottom of the bay is mostly sandy and from a depth of 3 fathoms shoals gradually to the beach.

In the middle of Trentaremi Bay a long rocky reef just peeps above the water, with a flat surface, which well merits the name of "la tavola di mare." On the rocks we have discovered traces of ancient work, testifying to the former existence of buildings upon them (**XXXIV.**). The northern end of the Tavola rises straight from the bottom in the manner of the square-cut foundations of seaside buildings, and it is traversed from side to side by one of those remarkable submerged *cuniculi*, to which we have so often directed the reader's attention: and here too the characteristic bending of the passage is not wanting. (Plan 6.)

Other artificial work lies beneath 6 feet of water near the south end of the Tavola on the eastern side.

[a] For a photograph of the Scoglio di Virgilio and of the Grotta dei Tuoni showing this excavation, see Günther, *The Phlegræan Fields*, p. 19; *Geographical Journal*, October, 1897.

[b] "Corogno" in some maps.

THE ANCIENT QUARRIES.

Under the high cliffs on the eastern side of the bay are many vast caverns frequently visited by pleasure parties. The Grotte dei Tuoni and delle Palumbe can be entered by boat for a considerable distance; the others are mostly raised above the water. That some of them are artificial is obvious, but a careful examination of those with less regular contours has convinced us that they also owe their origin to the hand of man: their hewers and their purpose have been alike forgotten.[a] We believe them to have been the stone quarries from which the Roman builders of the many edifices along the neighbouring parts of the shore obtained their building material, and no doubt the earlier Greek masons drew their stone from the same cliffs. Some bear indications of having been worked in more recent times, and have their floors but a few inches above the water. There are others and deeper ones which have been artificially cut 13 feet, 16 feet, and even 19·5 feet below the present surface of the water; those we believe to have been dry during the Roman period, and to have become submerged at a later date.

I. The floor of the Grotta dei Tuoni is 14 feet below the surface. The entrance is towards the south, and the main branch of the cave extends northwards for 60 yards at least. To the left of the entrance it opens into the shallow Cave II. under an arch 6 feet high, and further in, a channel, wide enough for a boat to pass, leads behind Cave III. A submarine passage, 17 feet deep, leads under this channel, and extends for some distance in the rock beneath the back wall of Cave III.

II. A very high but shallow excavation 24 feet wide with a low aperture at the back communicating with Cave I. The entrance faces west. (Plan 6.)

III. and IV. Both these lofty entrances lead into the same vast hall about 46 feet high by 24½ feet broad, extending north and south for 99 feet.

At the back is the channel communicating with Cave I. From near entrance IV. a narrow ascending passage has been hewn in the rock, which eventually reaches the vineyard above; but partly owing to portions of it being blocked with stone and partly to others having fallen, it is not easy to make the ascent.

Entrances II., III., IV. all open to the west over a flat shelf of rock 20 to 25 feet broad, which extends along the base of the cliff at a few inches below the

[a] Our reasons for regarding these caves as of artificial rather than of natural origin have been stated in the *Geographical Journal* for August, 1903.

surface of the water. Beyond the shelf the water suddenly deepens to over 4 fathoms.

V. This entrance gives access to a second deep and long cave which, as the floor is under water, can only be entered by boat. It may be identified as the Grotta delle Palumbe or Grotta di Silla[a] of the maps. It is about 65 yards long and opens to the south. At the entrance the water is about 13 feet to 14 feet deep, but further in the soundings increase to 16 feet and even to 21 feet, showing

Fig. 18. Tufa Quarries, Trentaremi Bay.

that the floor at the entrance has been raised by debris which have accumulated there, having probably fallen from the cliff above. As in Cave I., just within the entrance an aperture leads into the next cave, and still further in, a tiny hole in the roof communicates with Cave VII.

VI. A small rectangular opening in the face of the rock by the side of VII. which leads into Cave V. by an aperture 6 feet high by 5 feet wide.

VII. An opening 23 feet wide leads into a cave of rather irregular shape which is about 43 yards long and 39 feet high. At the back it has been excavated so as just to touch Cave V. at the small hole. One western branch opens at entrance VIII. and a second, 54 feet long by 30 feet broad, has been worked in the rock behind.

[a] In the *Carte du Golfe de Pouzzoles* "levée sur les lieux et dessinée par Mrs. de la Vega ingénieurs du Roi de Naples à Portici, 1778," No. 96 in Saint Non's *Voyage*, the Grotta di Silla is marked on the *west* of the Cavallo.

VIII. Is a round-arched entrance about 16 feet high and 31 feet broad. The bottom is much choked with large boulders which have fallen from the cliff above. On the east side of this cave a passage with a floor 1 foot 8 inches above the water-level leads into the large Cave VII.

IX. A lofty excavation which has evidently only just been begun.

Further north-west are the remains of some two or three low caves of no great depth; beyond these a landslip has completely obliterated all traces of ancient work.

Except in those places where the face of the cliffs has fallen away, there is a very clearly cut groove of erosion along the cliffs at a height of 20 to 24 feet above the sea. The surface of the rock below this groove is smooth and not much weathered, and generally presents the appearance of having been cut with tools. Above the groove the surface has the honeycombed appearance which we associate with atmospheric erosion or with erosion by wind-driven spray.

The inference to be drawn is that the original cliff face, whether cleft smooth and vertical by natural rock-falls or cut by man's hand, was hollowed out to form the caves during the Roman period or earlier, that subsequently a relatively rapid submergence took place, and that then the land remained stationary at a low level for a period long enough for the groove of erosion to be cut upon the cliffs. And whereas the surface of the cliffs above the groove has always been exposed to the action of the atmosphere, the lower part of the cliffs has been protected by immersion and hardened.

Between the Punta di Cavallo and the Bagnoli strand there are several traces of ancient work. There are more quarry caves (*e.g.* Grotta de' Bovi) under the cliffs; artificial passages have been driven through the islet rock of La Badessa and the Agnone headland, and several worked rocks may be seen under water. But our courage failed for a closer examination, for the newly-constructed sewer, the Scaricatoio di Coroglio, was polluting the sea with the sewage of Naples, and forced us to retreat, regretting that we could smell further than we could see.

The Evidence for the Former Existence of an Ancient Coast Road from Mergellina to the Capo di Posilipo.

The spectator who stands on the hill of Pizzofalcone and looks down upon the west end of the city of Naples will see it spread out in a panorama before

him, at first broad as it rises from the sea up the hill of the Vomero, which forms, as it were, the auditorium of an amphitheatre; then, where the hill bending joins the promontory of Posilipo, the town gradually decreases in breadth till it thins down to a long white line which stretches along the lower part of the promontory where land and water meet (*b*, *b*, fig. 19).

Rising from this first line of houses, immediately on the water's edge, is

Fig. 19. Posilipo as seen from Naples.
a, *a* Line of new houses along the Strada Nuova.
b, *b* Line of houses along the Course of the old Coast Road.

a second and newer line along a road (*a*, *a*, fig. 19), the fine Strada Nuova di Posilipo, which at the present time is the chief means of communication between the villas of Posilipo and Naples. It rises with a carefully engineered gradient from Mergellina, reaching its highest point in a cutting 150 feet below the crest of Coroglio. From this point a steeper but regular descent leads to the plain of Bagnoli on the other side of the ridge.

The road was one of those commenced during the occupation of Naples by the French. By their enterprise the old Via di Mergellina was extended (1808-1815). In 1816 the engineer corps of the Austrian army, which had assisted in the expulsion of Murat and in the Restoration of the Bourbons, continued the work; further

portions were completed during the reign of Ferdinand I., but the road is said not to have been definitely finished until 1830-1857.

Although the improved means of communication afforded by this road has caused a great impetus in house building in recent times, yet even in the days of the Romans and in the middle ages the agreeable situation of Posilipo made it a very popular suburb.

In ancient charters we find mentioned by name no less than five separate villages: Marechiano, Magalia, Santo Strato, Spollano, and Ancari.[a] At the present day the number is the same, for Villanova and Porta di Posilipo have taken the place of Magalia and Spollano, but the identification is uncertain. Most of these were upon the upper part of the ridge of Posilipo. Near the sea there still remain many houses dating from Spanish times, and also ruined foundations of Roman villas, which are especially numerous along the shore. These being far older than the New Road, the question arises as to what means of communication existed between them and Naples before the advent of the French engineers.

Before the nineteenth century the only cart road was the old Strada sulla Collina. Starting from the Vomero, it placed the houses and villages near the crest of the ridge in communication with one another, and it ended near the Torre Ranieri and Santo Strato. Numerous donkey tracks and flights of steps led from this main road to houses nearer the sea. There seems to have been no proper way of going by land from any of the more distant villas on the coast of Posilipo to the town except by ascending some one of these narrow donkey tracks as far as the top of the ridge, and of then proceeding along the Strada della Collina. A striking exemplification of this circuitous route occurred in the winter of 1888-89, when a landslip[b] blocked the Strada Nuova, near Palazzo Donn' Anna, and all the land traffic and foot passengers from the further side were put to the inconvenience of going to Naples by the upper road.

The inconvenience of such a route would naturally tend to make the sea the chief means of access to these waterside dwellings, but it would be one liable to frequent interruptions in unsettled weather, and without better means of communication the seashore of Posilipo is not one along which we should have expected to find isolated private residences either now or in Roman times.

It is the object of this part of our paper to collect such accumulative evidence as shall amount to a proof of our thesis: that a road connecting the Capo di

[a] Charter of Robert—(*Regest.* 1332. B. fol. 75.) Also charters of 25 May, 1333, and of 6 May, 1398, quoted in *Collina di Posilipo.*

[b] 31st December, 1888, at 12.15 a.m.

Posilipo with Mergellina formerly existed along the margin of the sea at a time when the land stood higher from the water than at present, and that the houses now fringing the coast mark the site of houses formerly existing along this road.

To support this contention we may adduce an old panoramic view of 1710, painted a century before the Strada Nuova had opened the way for traffic along the lower parts of the hill. In an explanatory paragraph to this view, Niccolini[a] states that only two out of nine houses identified by name along the coast were then used as private residences, the other seven being taverns and restaurants for the diversion of water parties, which seem to have been very popular in those days. Most of these places of entertainment have now become private villas.

Further, we would attach significance to the fact that many of the older houses near the sea have been constructed without any proper entrance on the land side. The original principal entrance is on the side to the sea, and access to the new road above has been obtained by the formation of a secondary entrance, sometimes on the first floor and sometimes even on the roof of the house.

In fact all those buildings along the water's edge, which were built anterior to the new road (1812), have the appearance and structure of having been erected along a road skirting the sea.

As it is now quite impossible to trace the supposed road along the entire length of the Posilipo shore, we shall content ourselves with enumerating such indications of it as we have observed, and with stating that we have assured ourselves that no physical obstacle to the road exists in the gaps, always assuming that a subsidence of land of at least 10 feet has occurred since the construction of the road.

The evidence that the land of Posilipo is now at a lower level than formerly is conclusive, for there are several Roman ruins at a much lower level now than when the buildings were constructed. For example, we may mention rooms with floors awash or beneath the surface, plaster adhering to submerged walls and passages excavated in rock which are now entirely below water.

Before proceeding to the details of the evidence and in order to trace the course of the supposed road now under the water, some slight description of the natural features of Posilipo will not be out of place. Except at the end of the hill nearest to Naples, where the natural contours have been much disguised by buildings, the structure may be easily perceived.

The tufa slopes of Posilipo are seamed, like a well-drained field, with ridges and furrows that run at right angles to the long axis of the ridge which extends

[a] This picture sometimes occurs as an appendix to Niccolini, *Fenomeni di Serapeo.*

from north-east to south-west. The coast line is undulating; little coves, with landing-places termed "*cale*," alternate with diminutive headlands, corresponding respectively to the furrows and ridges of the slopes. The detritus from the cliffs forms sandy beaches in the coves, and all sheltered spots, such as artificial harbours, tend to become rapidly silted up with sand drifted along the shore from the south. At no place near the shore is the water very deep, and the three-metre-line of soundings is sufficiently remote from the base of the cliffs to permit our conjecture of the possibility of a road if the land were raised a little above its present level. A rise of only 6 feet would make it possible to walk dryshod along the shore from the town to the Capo di Posilipo.

The oldest delineation of the coast of Posilipo that we know of, which has any pretentions to accuracy of detail, is the oil painting of 1710, referred to above, formerly in the possession of the Reale Istituto di Belle Arti in Naples. An outline sketch of this painting shows very clearly the position of the houses on the sinuous coast line, and has been engraved as an illustration to a book of Niccolini. (Plate XLIX.)

After carefully comparing the engraving with the Posilipo coast as it is in the present day, we come to the conclusion that except for the omission of a small headland belonging to the Roccaromana property, and except for some trifling details, the picture is a nearly correct representation: Niccolini, however, was either not quite accurate in his identification of all the houses, or else the rocks of SS. Pietro e Paolo have been wrongly placed; but for the sake of facilitating comparisons, we have reprinted his names in an appendix.

DESCRIPTION OF COURSE OF ROAD FROM THE RIVIERA DI CHIAJA TO THE CAPO DI POSILIPO.

The sea front of the west end of Naples has been so altered that it is not easy to recall its original condition before the Via Caracciolo, one of the finest promenades in Europe, and the gardens of the Villa Reale arose from a sandy shore. In old drawings of the beginning of the nineteenth century, we see that the fishermen drew up their boats and spread their nets on a sandy beach which extended uninterruptedly from the low tufa cliffs of the Castello dell' Ovo to the foreshore of Mergellina. At that time the sea came to within a few feet of the houses on the north side of Mergellina. It has now been pushed back far enough to allow of the building of an entirely new quarter of the town.

PANORAMIC VIEW OF THE COAST OF POSILIPO IN 1710.

The small numbers on the picture refer to the houses named in Niccolini's treatise.

Published by the Society of Antiquaries of London, 1903.

After Mergellina[a] the course of the old road must at first have been that followed by the Strada Nuova and have lain at the foot of the headland upon which the Church of Sannazzaro stands; then bending to the right it probably passed in succession the row of small houses behind the present octroi house, the site of Casa Roccella, the little Fort, and the Villa Guercia. Between the small houses and the Casa Roccella there was formerly a little bay in which in 1800 the water was deep enough for bathers, but this has been filled up by the embankment for the new road, which from this point rises steadily. Beyond the Villa Guercia, and as far as the next headland of Donn' Anna, the ancient road ran where now is a sandy beach, a favourite resort for bathers in the summer.

On this stretch of shore were discovered three Roman columbaria, with a vestibule all lined with coloured marbles, on the property of a Cesare Brancaccia in the time of Fabio Giordano. Near what was the house of Sir William Hamilton,[b] some workmen who were constructing the new road, came upon several small chambers hollowed out of the rock. In each of these chambers were twelve niches, three to each side: the entrance was from the vaulting.[c] The finding of these tombs and the columbaria is consonant with our theory that there once existed a roadway along this shore; for though not their invariable custom, it was usual for the Romans to bury their dead

[a] This term seems to have originally designated the curved beach between Sannazzaro or Barbaia and the Torretta di Chiaja, but now that the sea-wall of the Via Caracciolo has been finished (*circ.* 1884) all that remains of the natural shore line is in the fishermen's harbour.

Works upon the foreshore were executed under the commands of the Viceroy Toledo, and later of Charles III. (1745), who laid out the Via Mergellina. (*Storia del Reame di Napoli.* Cf. Lancellotti, *Promenade à Mergellina Pausilype*, Naples, 1842.)

PHILIPPO IIII. REGE.

ANTONIUS ALVARES TOLETUS
DVX ALBAE PROREX
UT HIC ETIAM OBLECTENTUR
QUIBUS INIMICA NAVIGATIO EST
MARGINEM HUNC ANPLIFICAVIT
AN. SAL. HUM. CIↃ IↃ C.XXVI.

Inscription in Sannazzaro's Church at Mergellina.

The breakwater of the harbour has been still further extended in our own times.

[b] Now either part of or very near the Villa Guercia.

[c] *Collina di Posilipo*, 76.

along the roads which led out of the towns, as for instance the Appian Way, the Street of Tombs at Pompeii, and the Via Campana at Pozzuoli, etc. although no such typical Street of the Dead has been found at Naples.

The palace built for Donna Anna Carafa, the wife of the viceroy, Duke of Medina, by the architect Fansaga, occupies the site (formerly known as the Sirena) of an older palace belonging to the Stigliano family,[a] and of a still more ancient Roman building. (Plate L.) The foundations of the palace rest directly upon a solid rock which juts out into the sea, and appears to have been artificially trimmed square. The top of this rocky platform is about 15 feet above the water, which is some 8 feet deep off the end of the rock.

At some time previous to the erection of the palace the rock was severed from the mainland by a cutting now faced with masonry and covered over by the building. There are traces of Roman work still adhering to the outer weather-beaten side of the rock. Had the supposed road been carried round the outside of the rock it would not only have deviated from its direct course but would also have been exposed to the sea.[b] We therefore think that the cutting through the rock, like others to be presently described, indicates the course of the ancient roadway, and that the thoroughfare between the beaches on either side was preserved by the builders of the Stigliano and Donn' Anna palaces, even though the subsidence of the land had resulted in the destruction of the roadway.

The only entrance to the palace was from the sea until the new road, which was partially constructed from the ruins, afforded an approach by the upper storey.

It is stated that several Roman tombs were found on the site of Donn' Anna's palace, which being in a line with the Hamilton columbaria before mentioned, lends additional support to the theory of the ancient roadway.

South of the palace stretches a beach which is only a narrow strip of sand now-a-days, but it must once have been a good deal wider, for we have been informed that so lately as the year 1820 it was possible to walk dryshod past the Scoglio di Frisio to the Villa Grotta Marina. This confirms to some extent a

[a] Sirenum domicilium Dragonetti Bonifacii memoria celebre; a Ravascheriis instauratum; scopulus Regibus dignus, qui ad Stiliani Principem devenit. Capaccio Lib. ii.

[b] In an illustration (No. 60) to vol. i. of the *Voyage pittoresque* of Saint Non (1781), the ruins of the palace are shown with a road passing between them and the sea. As this road is not shown in contemporary drawings, we believe that the artist drew from his imagination, unless the tradition of an old road reached him.

PALACE OF DONN'ANNA CARAFA AT POSILIPO.

Published by the Society of Antiquaries of London, 1903.

tradition current among the older fishermen of this coast, that the land along it is sinking, though we must always bear in mind that traditions about ancient beaches do not necessarily give us reliable information about ancient land-levels.

The obvious course for the road would have been along these beaches, close under the artificial-looking straight-cut rocks south of the Frisio, past and may be perhaps even under what is now the terrace of the Villa Grotta Marina. There are Roman ruins under the sea at this point which show it to have been one of the ancient building sites of Posilipo. Then the road passed inside two rocks named, like the *Insulæ Chœrades* at Taranto, after S. Pietro and S. Paolo, the inner aspects of which have been artificially cut, and through the next headland (Cavalcanti), where an ancient tunnel, now partly walled up and used as a boat-house, traverses the rock (fig. 20). The floor of the tunnel is flooded to a depth

Villa Grotta Marina.

Fig. 20. Cala SS. Pietro e Paolo as seen from the north end of the Cavalcanti Tunnel.[a]
The two rocks are shown to the right of the Villa Grotta Marina.

of 5 feet; a measurement which, if our theory be correct, will give us the depth to which the roadway has become submerged at this point. Attention should be drawn to the fact that a road following the line indicated would not deviate much from a straight course.

From this point we have not been able to trace any indications of the road-way. It must have passed under the low cliffs of the headlands of Roccaromana and the Villa Mazziotti, then across the sandy beach of the Cala Selvina under the villas of Montesanto Capella and d'Abro to the Cala S.M. Tramontana (6 feet deep). From here through the next headland of Durante (now Villa Luisa)

[a] From *Collina di Posilipo*, pl. 20.

another weather-worn tunnel,[a] about 26 feet by 20 feet high, having its floor 6 feet under water, and like that which pierces the Cavalcanti promontory, used at present as a harbour and partly walled up, led to the beaches and cutting behind the Villa Maraval (formerly Cancellieri), which the owner, the late Mr. George Rendel, enclosed within the works surrounding his harbour.

Below the Villa Luisa, standing on a shelf of rock covered by the sea, are four masonry columns and other ruins which we take to have belonged to a Roman house of some size, but which have at a later date been used to support the terrace of the villa; bits of ancient work are also to be seen at the northern entrance of the tunnel and the old mortar is full of fragments of marble. Roman remains were discovered by Mr. Rendel during the construction of the inner basin of his harbour.

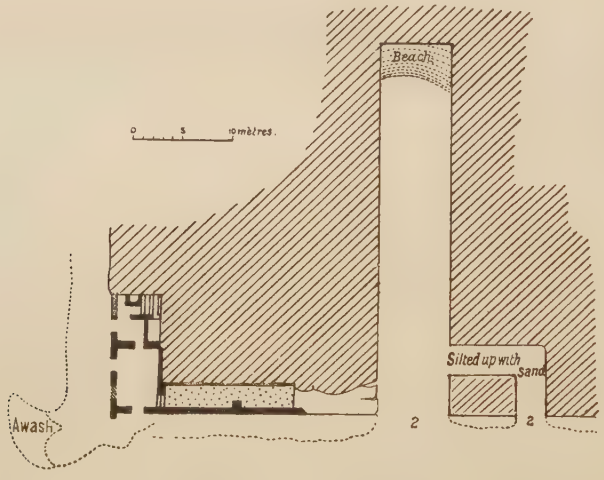


Fig. 21. Plan of House and Cave on Grotta S. Giovanni Headland.

From Villa Maraval there is a deviation in the straight course of the road, and it seems to have followed the sinuosities of the coast line. It is true that a large cave known as the Grotta S. Giovanni[b] runs through the next headland, but this seems to us of a much later date than the tunnels before mentioned, and its southern end, where it opens on to the little beach of Cala Cucina, is not straight enough for a roadway. We must assume therefore that the road between the Villa Maraval and the Capo di Posilipo passed on the outside of the intervening headlands.

At the corner of the promontory pierced by the Grotta di S. Giovanni are

[a] The reader of the paper was indebted to Mrs. Holcombe Ingleby for the loan for exhibition at the meeting of the Society of a painting in oils which shows this tunnel.

[b] 13 yards wide by 95 yards long.

the ruins of an old house, which now stands so near to the water that the waves lap over its terrace and even dash into its door in storms. Needless to say it has been abandoned. The site was probably a Roman one, and although the ruins seem to belong to a more recent period, we found marble and blue mosaic fragments mingled in the mortar of the walls. An attempt has evidently been made to render the house habitable, for the north window and one of the two east windows of the principal room have been walled up. A passage seems to have led from this house to a low artificial cave.[a] The floor is submerged to a depth of 6 feet. A small side branch 7 feet high opens out of the northern side, and becoming 4 feet lower, opens on the face of the cliff. At the back of the cave a spring of water, good for the eyes, is said to have its source. The floor of the cave having been quarried may be considered, as is the artificially trimmed rock platform in front of the house, an indication of the subsidence of the land.

At the southern end of the beach of the Cala Cucina are three ancient caves now partly walled up, but as their floors are nearly 6 feet above the sea-level they do not yield additional evidence concerning the subsidence of the land.

The headland, formerly belonging to the well-known property of Keppel Craven, but now owned by Signor Gallotti, seems to have preserved traces of the ancient way along the foot of the cliffs in the flat rocks, submerged and covered by a luxuriant growth of green seaweed.

One of the few deep places along this shore is between the rocky reefs upon which the terrace of Villa Gallotti is built and those which support the northern wall of the Manzi harbour. The depth of water is 13 feet, but inasmuch as the distance between the reefs is not great, the gap would not have been hard to fill.

We then come to the beaches on which stands the Polveriera, a powder magazine of Bourbon times but now used by Signor Manzi as a depôt for his wine. He has enclosed a small harbour by constructing a breakwater. Beyond this are the flat rocks which lie round the Capo di Posilipo and over which an excellent road might be made, if they were but a few feet higher and therefore raised above the water.

We have now considered some details of the stretch of the Posilipo shore from Mergellina to Capo di Posilipo as they are shown on the old drawing of 1710 and as they exist at the present day. And we have shown that these details seem to tell in favour of the subsidence of land and of the former

[a] About 23 feet wide by 121 feet long by 11 feet high above water.

existence of an old road. On the whole, vestiges of Roman work are not as numerous as they are along the southern section of the coast. And so we should feel tempted to hazard the conjecture that the great beauty of the southern extremity of the Posilipo Promontory made it more popular in Roman times than the eastern side, which is so much sought after now, were it not that the proximity of an expanding town and the great number of villas which have been erected during the last two or three centuries may have caused the scattering of the materials of which the Roman buildings were constructed and have thus effected their obliteration.

THE APPROACH TO NEAPOLIS FROM THE WEST BY THE GROTTA DI SEJANO.

In the days of the Roman dominion two main roads led from Rome to Neapolis. The one, the Appian Way as far as Capua, whence a consular way led due south through Atella to Neapolis; the other, leaving the Appian Way at Sinuessa, proceeded along the western shore to Cumae, where, turning eastward, it passed under the Arco Felice to Puteoli and thence to Neapolis. An inscription found at Castel Volturno shows that a road from Sinuessa to Cumae existed in the days of the Republic, but as it was remade by Domitian it has acquired the name of the Via Domitiana, and is described as such by Statius. It was the shorter route by some three miles. (*Cf.* the inset to Map 2, Plate LI.)

The approach to Naples from Puteoli is made difficult by the interposition of the volcanic ridge of Posilipo, which rises like a steep rampart on that side. In consequence, the engineering of an easy roadway has been a matter of great difficulty.

The view which is commonly held concerning the ancient roads between Naples and Puteoli is summarised by Beloch.[a] The most ancient road between the two towns, the Via Antiniana, left Naples from the north-west; behind the Museum it ascended to the plateau of Antignano, and passed by Soccavo and the site of Lake Agnano to Puteoli (Map 2).

A second road passed through the Grotta Vecchia di Posilipo, a tunnel 774 yards in length, artificially cut through the mountain. This tunnel is referred to by classical writers as the Crypta Neapolitana, and usually in no favourable

[a] *Campanien*, p. 83.

From "The Geographical Journal" for August, 1903.

RECENT & ANCIENT COAST LINES OF THE PHLEGRAEAN FIELDS.

Published by the Society of Antiquaries of London, 1903.

Published by the Society of Arabic Literature, London, 1893.

terms. Seneca, in particular, complains of its darkness, which, he adds, is only made more apparent by the torches.[a] Petronius seems to have had an equally bad impression of it. "Satis constare, eos nisi inclinatos non solere transire Cryptam Neapolitanam!"[b]

Now it has generally been assumed that this tunnel is identical with the one mentioned by Strabo as having been constructed by the engineer Cocceius, in obedience to the command of Augustus:

τοῦ Κοκκηίου τοῦ ποιήσαντος τὴν διώρυγα ἐκείνην τε (from Cumae to Avernus) καὶ ἐπὶ Νέαν πόλιν ἐκ Δικαιαρχείας, ἐπὶ ταῖς Βαίαις.

Strabo in a later passage[c] says: "There is a hidden passage through the mountain between Dicaearchia (=Puteoli) and Neapolis, which is pierced like the one near Cumae, so that a way is open for carriages to pass for several furlongs, and light from the outside of the mountain is brought down through shafts from many directions."

Beloch, assuming that Strabo is describing the Grotta di Posilipo, which has *no* shafts for illumination, writes: "Die letztere Angabe (of Strabo) ist nun allerdings nicht exact." But it is also possible to have a greater belief in the accuracy of an ancient writer and to assume that Strabo knew what he was writing about and was exact in his details. We believe that Strabo was describing the other tunnel through Posilipo which *is* provided with apertures for the admission of light. This tunnel is commonly known as the Grotta di Sejano.

This second tunnel traverses the Posilipo hill near its southern extremity. It was re-discovered in 1840, and has been to some extent restored.

The western end is of easy access from Puteoli, but the eastern opening does not apparently lead anywhere at the present day except to the ruins in the little valley of the Gaiola, *cf.* p. 20. This great work of subterranean engineering is commonly supposed to have been done to give the occupants of the palatial villa of Vedius Pollio an easy means of access to Puteoli. We cannot regard this as a sufficient or satisfactory explanation for, after making full allowances for the extravagant luxury of the equipment of this villa, it is hard to believe that even a Pollio, merely for the convenience of his household, would have gone to the expense of so large a tunnel, 844 yards long, and with a cross section of 9·2 yards to 5·7 yards high by 7 yards to 4·7 yards broad, and thus exceeding in size and length(by 79 yards) the Posilipo tunnel, a tunnel made to carry all the traffic between Naples and the West.

[a] Seneca Ep. 57, 1, 2. [b] Petronius Fragm. xvi. [c] Strabo, Book V, c. iv, 7.

If further testimony be needed that this great triumph of engineering was more than a mere underground private carriage drive, such as has been constructed at Welbeck by the late Duke of Portland, it is supplied by the two inscriptions which were found here.[a]

The first shows that a restoration of the tunnel was undertaken in the fifth century:

IONORIO
IAVSILIP
CLECTAA
RAIVSVCCAMP
PVBLICO REDDIT

The second is on a milestone, the very existence of which indicates a main road:

VII
D.N
FL.VAL
CONSTANTINO
PIO.FEL
INVICTO.AVG
DIVI.CONSTANTI
PII.FILIO

The submerged ruins of the foreshore supply us with a final proof of the extreme likelihood that the Grotta di Sejano was the shaft-lit tunnel referred to by Strabo, and was made by Agrippa to carry the high road from Rome to Naples.

If we consider that beneath the sea there is abundant evidence of the former existence of a considerable and thickly populated area, with a sea-board lined by the residences of the wealthy and influential, and remember that near by stood a theatre and many other important buildings, and that there were two ancient harbours at no great distance, then we have a new and more likely explanation of the purpose of this magnificent tunnel, and in its existence here we find the final link in our chain of evidence in favour of the low-level road which served as the chief means of communication along this shore.

[a] Beloch, *Campanien*, 87.

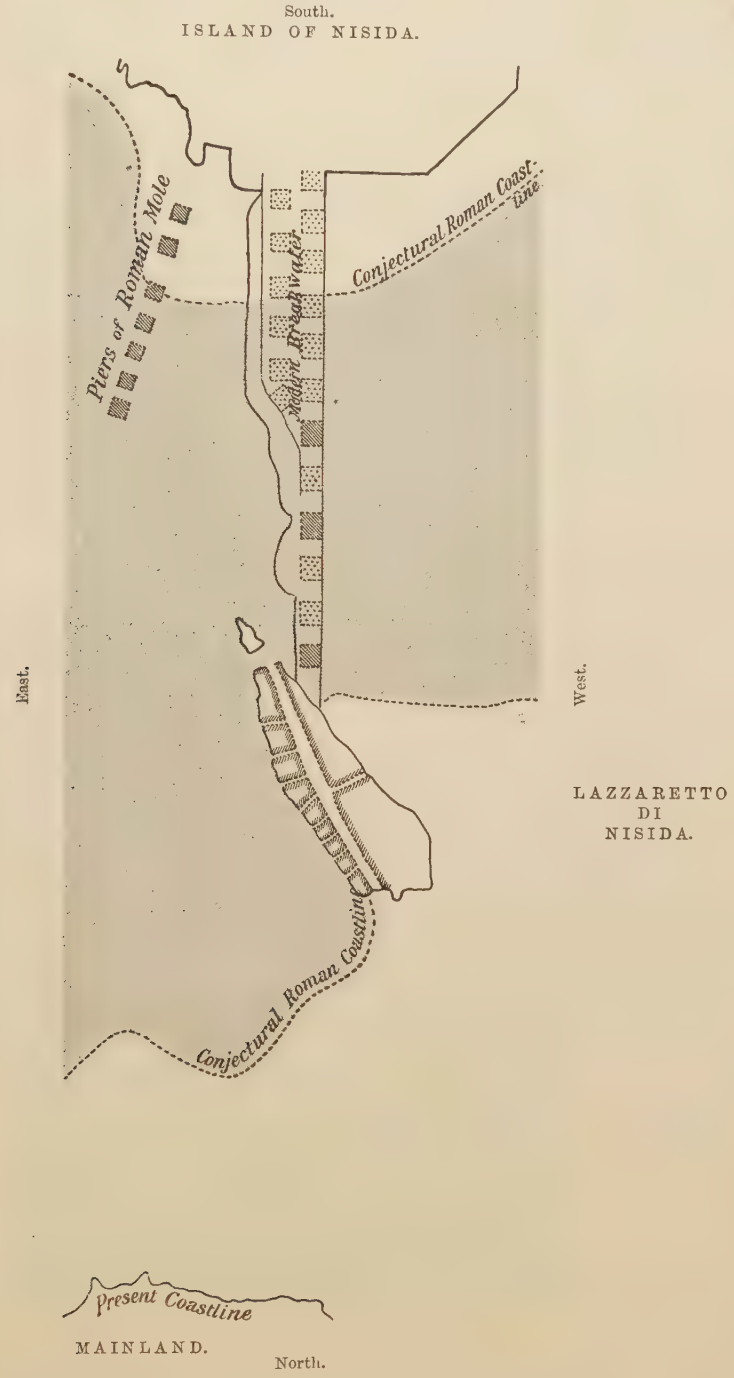


Fig. 22. Plan of the Tunnel in the Rock of the Lazzaretto di Nisida. and of the ancient and modern harbour works.
Roman work ////////

If we may here retrace our steps along its imagined course, we would suggest that the road on emerging from the eastern end of the tunnel would follow the Vallone di Gaiola as far as the beach of that name. From there a branch probably went to houses of the Gaiola Region, the conjectured site of Palaepolis, while the main road followed the shore eastward inside the Pausilypon harbour. By the side of the road stood the Marotta House, the Lampi House, the House of the Three Buttresses, and the Casa degli Spiriti. The road passed between "Pollio's fish tanks" and the old house, it skirted Marechiano Harbour, and finally, before rounding the Capo di Posilipo, traversed what is now the fishermen's harbour by Villa Rosebery and gave access to the ancient buildings of the Rosebery Region. From the Capo di Posilipo to Naples the course of the road has already been fully described.

THE SUBMERGED REGIONS OF NISIDA, BAULI, AND MISENUM.

Many changes in the configuration of the coast line of the Phlegræan fields must have taken place as the result of the subsidence of the land. To the shifting of the position of the lagoons, the Lucrine, Mare Morto, and the Acherusian Lake or Lago Fusaro, and of their sand-bars, we have drawn attention elsewhere. It now remains for us to mention certain partly submerged sites which would be likely to repay further study.

LAZZARETTO DI NISIDA.

The rocky islet of the Lazzaretto di Nisida is tunnelled from end to end by a

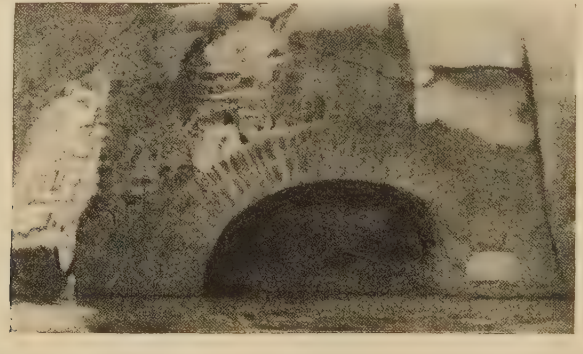


Fig. 23. Lazzaretto di Nisida, North End of Passage.

passage of some 15 feet in height, of which two-thirds are under water. The passage was lit by apertures, now submerged, cut through the sides of the rock as

shown in the plan (fig. 22). At the northern end (fig. 23) a round arch of flat tiles supports the superincumbent rock; at the southern end is a pointed arch of alternating layers of tiles and tufa (fig. 24). The end of the rock was faced with *opus lateritium*.

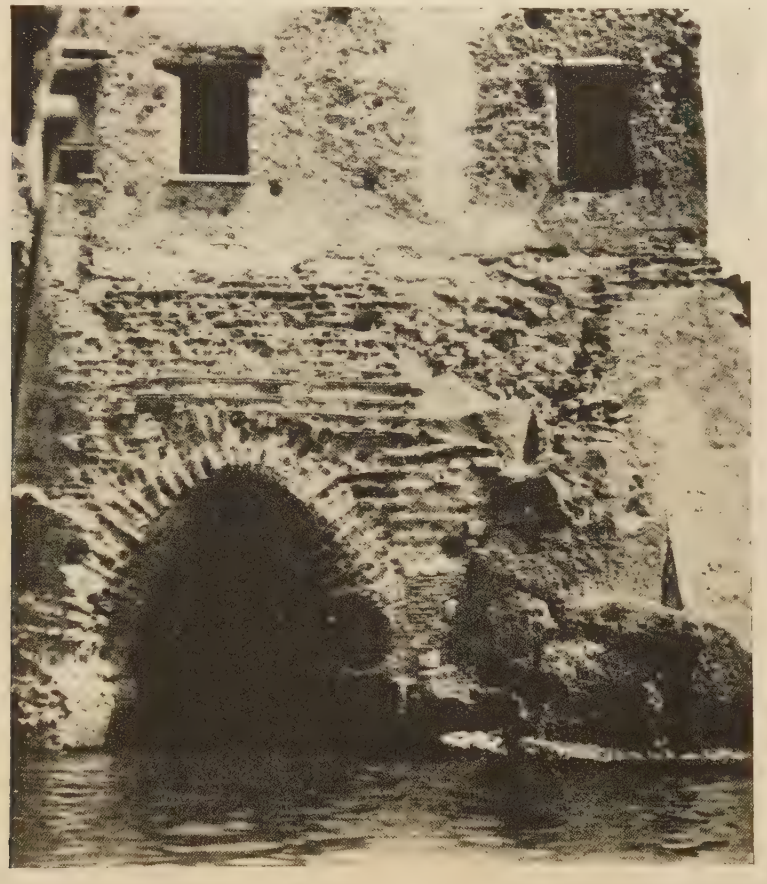


Fig. 24. Lazzaretto di Nisida, South End of Passage. The upper part is modern.

The rock seems to have stood in the ancient harbour at the end of a sandy beach, and it was no doubt covered over with buildings as at present, but the purpose of the remarkable passage we are at a loss to divine.

BAULI.

The beaches of the Lucrine Lake and of Baia are separated by a headland, the Punta dell' Epitaffio, which, jutting out into the sea, forms the northern limit of

the Bay of Baia. At the Roman land-level the bay, as we now know it, did not exist, its place being taken by a shallow lagoon separated from the sea by a sand-bank. We have elsewhere[a] identified this lagoon with the Stagnum Baiarum[b] which was cut through by Nero, and with the STAGNV represented upon the Piombino glass vase.[c] The sand bar between the lagoon and the sea would have been continuous with a beach which probably extended all round the Punta dell' Epitaffio. The modern road from Pozzuoli to Baia rises high enough from the sea

Fig. 25. Seaside houses under Tufa Cliff at Bauli.

to pass through a cutting near the extremity of the headland, and many ruins may be seen on the hillsides.

Scotti and Mortorelli support their contention that the ancient Bauli is to be identified with this site rather than with Bacoli on the other side of Baia by much interesting and convincing erudition, and we are fully in agreement with their view that Bauli must have been here near the Via Herculanea, and between the "portus Baiarum" and "Lacus Lucrinus."[d]

The shore is lined with the ruins of ancient houses of which the greater part

[a] Geographical Journal, September, 1903.

[b] *Vit. Alex. Severi*, 26.

[c] An early specimen of that topographical crockery, which visitors to seaside watering-places love to bring back to their relations. It was found at Piombino. De Rossi, *Bull. Nap.* n. s. l. Pl. ix. A similar vase is preserved in the Museo Borgiano de Propaganda.

[d] Pliny, 3, 5, 9, § 61; Tacitus, Ann. xiv. 4; Symmachus I. i.

have been washed away; all are too near the water to be habitable, and plainly indicate the subsidence of the land.

These ancient remains begin under the turn of the road near the sudatoria, commonly called Nero's baths, with a one-storeyed building, of which the floor of the principal room is now scarcely raised a yard above the water.

A few yards further south are the ruins of a more important building, also built against the cliffside (fig. 25). On the south (left) are parts of a massive ancient pavement of *opus signinum* laid on concrete. The outlines of vaulted ceilings, both over the ground and first floors, are clearly marked on the cliff at

Fig. 26. Roman House at Bauli.

the back of the house. In the adjacent structure to the north the more perfectly preserved side walls and vaulting show that the ground-floor rooms were higher than in the case of the southern building.

Other Roman walls have been covered over by the large wall built to underpin the new roadway, and round the point a succession of ruins on the water-line extend as far as the beach of Baia: these we believe to have belonged to buildings which looked out upon the *stagnum Baiarum*.

The most easterly group of ruins is situated at a short distance beyond the retaining wall, which nearly reaches the Point. They commence with the remains of three chambers under a broad spreading vault, a single chamber, and a broad arch.

West of the little modern wooden pier is the most imposing of the ruins, a three-storey building of which the lower storey is submerged (fig. 26). The scale of the building may be judged by the fact that the chambers are $3\frac{1}{2}$ yards across, and that the vaulting of the ground-floor rooms is 6 feet above the water-level, the floor being about 5 feet below. At the water-level is a course of red tiles perforated with round holes. It is interesting to note that the walls have been eroded at the springing of the vaulting of the upper storey. We have, therefore, further confirmatory evidence of the greatest submergence having occurred since Roman times; and the well-preserved nature of that part of the building which is below the erosion line shows that the earth-movements must have been relatively rapid.

In the face of the cliff above the beach may be seen many chambers of another building, of which the front wall has been demolished by the waves.

When the land-level of the site of Bauli was at a higher level, the road from Baiæ to Puteoli probably passed along the beaches under the Punta dell' Epitaffio, thus providing all the buildings on the shore with an easy means of access, and then along the Via Herculanea close to the edge of the water: and by this highway the first seaside houses at Bauli may have sprung up.

The buildings of Bauli, of which we have some record in literature, are the Temple of Venus Lucrina, which may have stood on the Punta dell' Epitaffio itself;[a] the country house of Pompey the Great, which was situated "summis jugibus montium[b];" the Cumanum of Marcus Varro, which was not far off;[c] and the villa of Quintus Hortensius, at which C. Avianius was expected notwithstanding the attractions of the Puteolan Arcades[d]; it was here too that Antonia, wife of Drusus, decorated a tame muræna with earrings. This last villa must have been low down near the Bauli end of the Lucrine Lake; but as the Lucrine Lake probably lay further to the south, as well as at a much lower level, than its small shrunken representative does now, it is not impossible that the site of the villa may have been that of a building near the site shown in fig. 25, and on the eastern side of the Epitaffio headland.

[a] Beloch, *Campanien*.

[b] Seneca, Ep. 51.

[c] Cic. *Acad.* pr. i, 1.

[d] C. Avianium fortasse in porticu neptuni ambulantem. Cic. *Acad.* pr. ii, 25-80.

CAPE MISENUM.

The Great Cave.

The largest artificial cave in this neighbourhood has been hollowed out of the cliff on the eastern side of Cape Misenum (fig. 27). The outer hall is nearly square in plan, and measures 75 feet wide by 57 feet high. The roof was originally barrel-shaped, but much stone has fallen from it. At the inner end there is a continuation measuring some 39 feet square and 34 feet high above the present water level. In the west and south walls are niches at the water line. The floor cannot be seen, being covered with debris and water, but it must be at least 6 feet

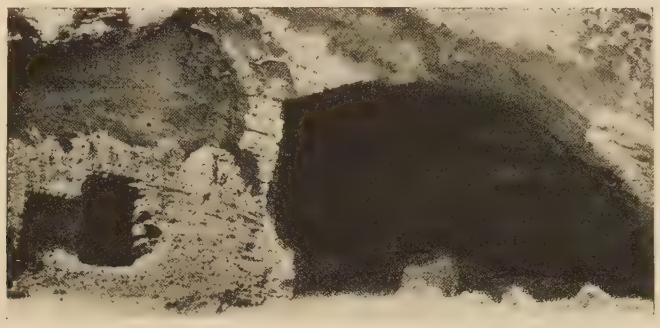


Fig. 27. The Great Cave at Misenum.

below the surface. From the middle of the southern wall of the large cave a passage (now partly filled with water to a depth of 6 feet) leads to an inclined way, measuring 13 feet broad by 14 feet high, which opens on the face of the cliff at about 10 feet above sea-level, and to the south of the principal entrance to the cave. That this great cave was no mere stone quarry is proved by the fact that traces of an internal plaster coating still adhere to the roof of the inner cave, and that both the inner and outer caves were decorated with a cornice in relief cut from the solid rock, which runs all round under the springing of the ceiling (fig. 28).

A line of foundations is to be seen under water at the mouth of the cave. Outside the soundings rapidly deepen, so that at 16 feet from the front of the cave we find from 23 to 29 feet of water. It therefore seems likely that supposing the land to have been, say, 16 feet higher in Roman times, which would have been ample to ensure a dry floor to the cave, there would still have been enough water

for boats to come alongside the entrance: landing, however, except in calm weather, must have been difficult.

Of the history of this magnificent cave there is no tradition. It is not likely to have had anything to do with Agrippa's harbour works, for they would all have been in the bay, out of the way of storms. Nor does it seem likely that this hall in the rock was a luxurious appendage to some noble villa which stood

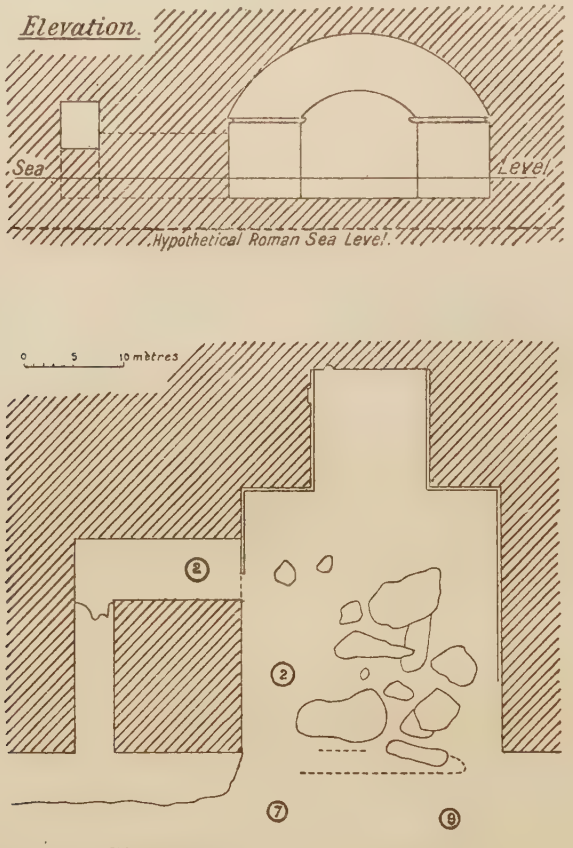


Fig. 28. The Great Cave at Misenum.
The numerals on the plan indicate the soundings in metres. The double line represents the cornice.

upon the hill above, although the villa in which Tiberius died and which had cost Lucius Lucullus two and a half million sesterces may well have been provided with such a cool retreat. In character the cornice reminded us strongly of the echinus of Greek Doric capitals such as are seen in the temple of Poseidon at Pæstum, and on this account, together with the general resemblance of the plan of our cave to that of many a rock-hewn tomb in Ægina and elsewhere, we believe it to be a monument to a Greek hero, perhaps to the steersman of Æneas, who

died at Cumæ, and with whose name the mound-like promontory has ever been associated.

We believe that a path led from the cave southward along the foot of the cliff to the point where there is a passage through the rock. The floor of this passage is 16 feet below the surface, but there seems reason to believe that, like the passages through the Punta Pennata, it is artificial, and was formerly above water. The present condition, however, is such that we have steered a steam launch through both passages.

Rock-hewn Chambers near the Grotta Dragonara.

Near the Grotta Dragonara, at the eastern end of the Spiaggia di Miniscola, and at the foot of the north-western slopes of the old volcanic hill of Misenum, there is a row of small chambers, some built, some excavated in the tufa rock,

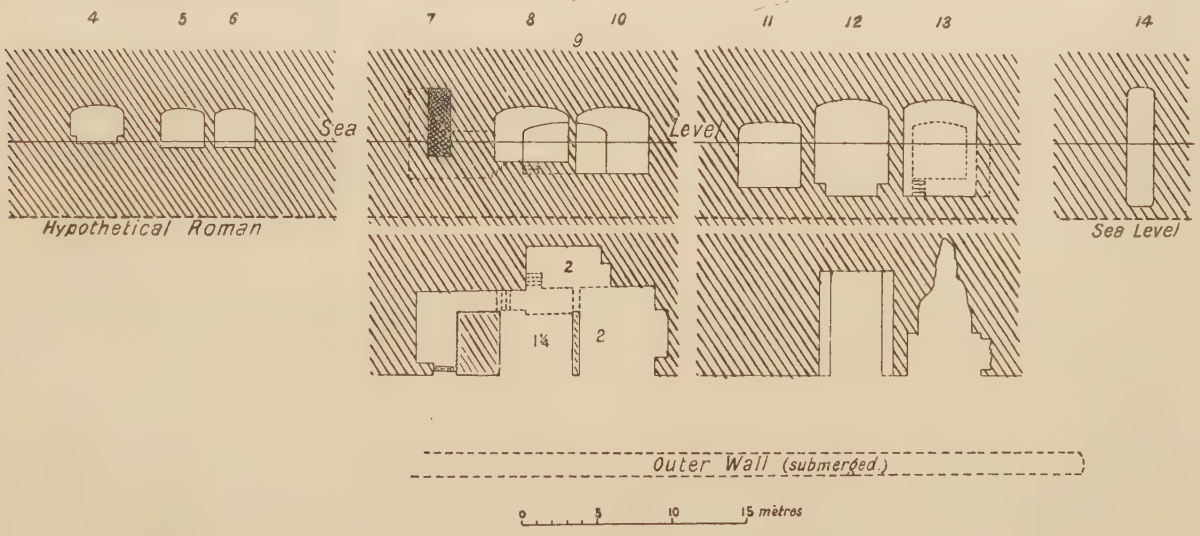


Fig. 29. Elevations and Plans of Submerged Chambers (4-14) near the Grotta Dragonara.
The numerals in Chambers 8, 9, *and* 10 *indicate the soundings in metres.*

which are at the present day partly submerged in water, partly buried in the sand of the beach. The character of the various chambers and the extent to which they are submerged will be described in the detailed analysis below. The walls of *opus reticulatum* still standing in some of the chambers show that they were used in Roman time, and that they may have been inhabited when the villa of Caius Marius, near the summit of the mountain, was occupied by Lucullus or Tiberius,[a] or when Augustus (B.C. 31) created a naval station of considerable

[a] Phædrus, ii, 5.

importance upon the site now occupied by the village of Miseno, between the Miniscola and the northern slopes of the mountain.[a]

The floors of several are 12 feet below the surface of the water: the walls show traces of having formerly been plastered: steps leading from one room to another at a lower level can be clearly seen below the water. With regard to their history we can merely suggest that they may have been Greek tombs, which became used as dwellings or for other purposes by the Romans.

Notwithstanding the comparatively sheltered nature of the spot, the greater part of the western walls has been washed away; indeed the artificial hollows in the rock are all that meet the eye; but foundations lying parallel to the shore may be seen below the surface. It is possible to walk or wade into the chambers at the north end of the series from the beach, but those at the south end open on to deep water. And, although not an invariable rule, the floors of those chambers which are furthest from the beach are at a lower level than those nearer the beach.

In the following table the chambers are described in order from north to south, proceeding from those which may be entered dryshod from the beach to those to which there is no access except by boat: the numbers correspond to those in the plans (fig. 29).

Short Notes on partially submerged Chambers in the Rock near the Grotta Dragonara.	Height of Ceiling above Water Level.		Depth of Floor below Water Level, at least.	
	Feet.	Ins.	Feet.	Ins.
1. Floor silted up with sand	6	6		9
2. Low ceiling, almost entirely submerged . .	1	6	(?)	
Steps to fisherman's house.				
3. Chamber, at least 13 feet high, with a passage (ceiling 3 feet 6 inches above water level) leading out from its south wall	10	0	3	0
4. A shallow excavation, showing ancient plaster upon its walls and an indication of two raised seats, 1 foot 6 inches, along the side walls. *Cf.* No. 12 .	8	6	—	

[a] Cp. Pliny, *Letters*, vi, 16, 4.

Short Notes on partially submerged Chambers in the Rock near the Grotta Dragonara.	Height of Ceiling above Water Level.		Depth of Floor below Water Level, at least.	
	Feet.	Ins.	Feet.	Ins.
5, 6. Almost entirely washed away; a mere scar upon the rock behind indicates the former existence of these two chambers. Also indication of former existence of a room above	6 6	6 6	— —	
7. Narrow. A wall of *opus reticulatum* has been built across the inner end of this chamber to divide it off from a rather broader and deeper chamber within which latter also communicates with Chambers 8 and 9	11	6	3	0
8. The floor of this chamber is 4 feet below the level of the water; it communicates with the chamber behind Chamber 7 and also with Chamber 8 by short flights of steps, which are entirely submerged	11	6	4	0
9. The floor of this submerged chamber is on a level with that of Chamber 10, but 2 feet 6 inches below that of Chamber 8	4	6	6	6
10. About 5 metres wide. Chambers 8 and 10 form a pair connected by 9	11	6	6	6
11. Not so deep as the adjoining chambers . .	4	6	10	0
12. Two raised seats along the side walls, as in No. 4 and in the Grotta di S. Giorgio, near Sorrento. *Cf.* the seats in the Gaiola Cave, described on p. 26	10	0	11	0
13. A shallow lateral extension on the south side, as in No. 10. The hinder portion of the chamber is apparently in an unfinished state, and the dimensions are smaller than those of the outer chamber. Steps lead to the raised floor . . .	10	0	11	0
14. The highest of all the chambers. The floor is also lower than that of the other caves nearer the Miniscola Beach	12	9	13	0

APPENDIX.

The Topography of Posilipo.

In our account of the course of the ancient roadway it has been found necessary to go into the topographical detail of Posilipo with so much minuteness that the ordinary geographical nomenclature is insufficient. When unable to discover the name for any locality, we have adopted the Italian custom of calling it after the owner or occupant of the property. To this custom is due an ephemeral nomenclature and much confusion, for the names as they stand at present rarely agree with those given in the old maps, and sometimes not even with those mentioned by recent authors. We have therefore compiled a table of synonymous names for the assistance of the reader, who may desire to follow our description with old maps.

To those who are interested in topographical history we would recommend the maps by Rizzi-Zannoni, and especially the beautiful and accurate map (scale 1:25,000) prepared by the French engineer officers during the French occupation, which was productive of so much profit to Naples. From these and other sources of information we have collected the names which are summarised in the accompanying table.

NAMES OF POSILIPO HEADLANDS AND COVES AND OF THE HOUSES THEREON

Arranged in sequence from north-east to south-west.

The names of the more conspicuous headlands are distinguished by numerals. An asterisk * indicates a name in the French Map of 1818. [ ] = mistaken identification. T = tunnel or cutting through headland. R = ancient site. V = villa.

NAMES ADOPTED BY THE AUTHOR.		SYNONYMS.	NICCOLINI'S NAMES AND NUMBERS TO THE PANORAMA OF 1710.[a]
*Mergellina	R		
1. * Sannazzaro		Barbaia	4. Sannazzaro
V. Roccella		* de Bernardo, V. Carolina, V. Sciarra, V. Giulia	6.
* Fortino V. Guercia		*Rossetti	7. [Edifici demoliti nel costruire la nuova strada di Posillipo sulla collina] (Probably an error)

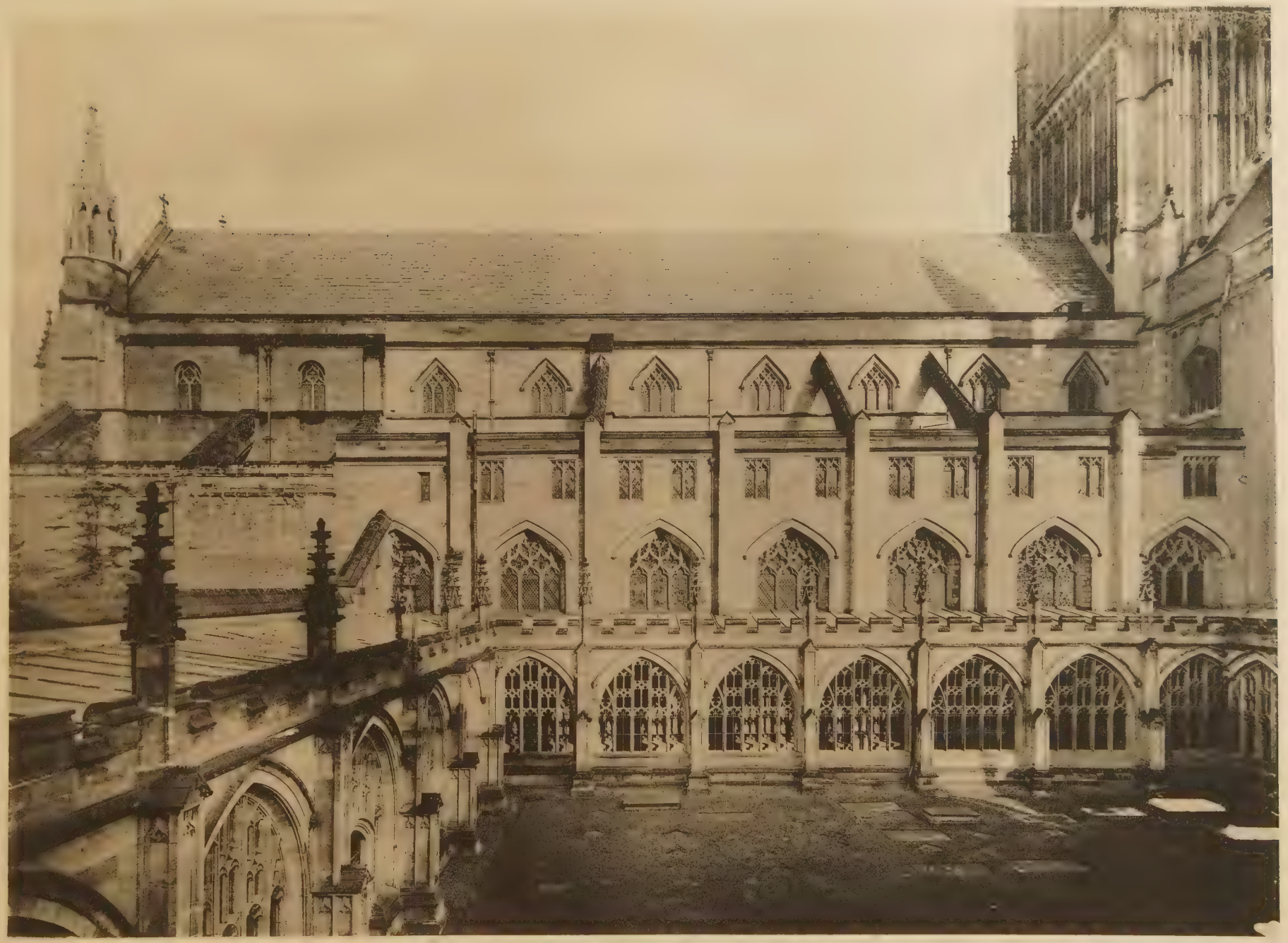
[a] Plate XLIX..

Names adopted by the Author.		Synonyms.	Niccolini's Names and Numbers to the Panorama of 1710.
2. Donn' Anna	TR	* Fabbrica di Cristalli, Palazzo Medina	9. Palazzo di Dognanna, oggi vetriere
. . . . .		* Frisio	. . . . .
3. Grotta Marina	R	(unnamed)	12. [Frisia], oggi taverna
Cala SS. Pietro e Paolo		* S. Pietro a due Frati, Cala due Fratre	(The two rocks are shown)
4. * Cavalcanti	T	V. Tafuri V. Calabrese	13. [S. Pietro a due Frati], oggi taverna 14. Principe di Colombrano, oggi taverna
. . . . .		. . . . .	. . . .
5. * Roccaromana			(omitted)
. . . . .		. . . . .	. . . . .
6. * Cappelli		V. Mazziotti	15. [Roccaromana] (*cf.* p. 40)
* Cala Selvina		V. Capella, Vecchio Convento di S. Geronimo	(Drawn, but not named)
7. * Sivo		V. Cappella di Montesanto V. d'Abro	16. [Palazzo di Capelli], oggi taverna
* Cala S. M. Tramontana		. . . . .	. . . . .
8. V. Luisa	T	* Durante, "casa diruta"? V. Garunchio	(Drawn, but not named)
Casa Severino	R	"Bagno romano"	
9. Maraval	R	*V. Cancellieri, V. Rendel, V. Rocca Matilde	17. Palazzo di mal costume, oggi taverna
* Cala Grotta S. Giovanni		. . . . .	. . . . .
10. Grotta S. Giovanni		* Capelli, "Casa caduta"	18. Casa Romana diruta (but the picture shows a well-built mansion !)
* Cala Cucina		(Caves of doubtful reputation)	

Names adopted by the Author.		Synonyms.	Niccolini's Names and Numbers to the Panorama of 1710.
11. * Keppel Craven[a]		{V. Antona Traversi {V. Gallotti	19. Convento di S. Giovanni, oggi locanda
* Polveriera (de Mellis Trattoria) (Landing place)		Stabilimento Manzi	20. {Ruderi di fab- 21. { briche romane
12. * Capo di Posilipo	R	* Lavoratorio, V. Volpicelli * Fortino del Capo	22. Palazzi della punta del capo, oggi taverna
Villa Rosebery Harbour	R	V. Delahante, V. del Principe Luigi	
13. V. Emma * Pozzillo		*Cannonate, Sciavechiello	
14. * Campanello Carmen Bay		Cala Garofalo, * [Zaffarana]	
15. Pacelli Peschiera		* [Cala Garofalo]	
. . . .		. . . . .	
16. Malatesta	R	Punta Nera	
Cala di Punta Nera	R	* [Portiglione][b]	
17.	R	. . . . .	
Marechiano Harbour	R	* Peschiera	
Casa degli Spiriti	R		
18. House of Three Buttresses	R	* Belvedere	
Cala di Lampi	R		
19. * Marotta	R		
Cala di Gaiola	R	Cala S. Basilio	
20. * S. Francesco	R		
Gaiola Channel	R		
21. Scoglio di Virgilio	R		
* Cala Trentaremi	R		
22. * Cavallo			
* Cala Badessa	R		
23. Capo Coroglio		Corogno	

[a] This property was given to the Margrave of Anspach by Ferdinand I.

[b] The Portiglione proper is really on the other side of the headland, within the harbour of Marechiano.



EXTERIOR VIEW OF THE CATHEDRAL LIBRARY AT WORCESTER.

Published by the Society of Antiquaries of London, 1903.

XXIII.—*The Mediæval Library of the Benedictine Priory of St. Mary, in Worcester Cathedral Church. By the* Rev. J. K. Floyer, *M.A., F.S.A.*

Read 12th March, 1903.

A writer on the subject of the ancient Library of the cathedral priory of St. Mary, Worcester, is confronted by unusual difficulties, in the dearth of documents which throw light on it. No catalogue of the books is preserved of a date anterior to about 1650, and this is an incomplete and very roughly made one.[a] The library has been moved more than once, and the architecture of some of the buildings which contain it has been altered or renewed at subsequent periods. If reliance therefore is placed on external evidence alone, the history of the library would be most meagre and uncertain. Fortunately a good portion of the library itself remains, and tells something of its own history. Moreover, from a close examination of the existing buildings, of the chisel marks and varieties of stone, the architectural history can be to some extent collected.

The library, which, as an institution, is older than any portion of the present buildings, appears originally to have been situated very much where part of it remains now, that is to say, over the south aisle of the cathedral church, between what was the monastic dormitory and the nave. (Plate LII.) The two western bays of the church are of the twelfth century, and over the south aisle of this portion still exists a small room, now an ante-chamber to the present library, which may have been part of the room where the books were kept in earlier days. It is approached by a circular staircase of fifty steps, from the cloister or the church itself. Eastward of this all the upper part of the south side of the church was rebuilt towards the end of the fourteenth century. The level of the vault of the aisle below was raised, and necessitated the introduction of six steps, which now

[a] Bib. Bodl. Tanner MS. 268, fol. 113.

lead from the western twelfth-century room into the present fourteenth-century library, which covers the whole of the remaining length of the aisle as far as the central transept. This fine room, 121 feet long and 19 feet 2 inches wide, is lighted on the south or cloister side by twelve two-light square-headed windows, all of the same size except the one at the west end, which is smaller, and has only one light. The whole of this room is built of red sandstone from the Holt quarries. This red stone is not used in the cathedral church before the beginning of the fourteenth century, but, with the exception that the older white and green stones are used for patching, is generally employed after this time. The use of this red stone therefore forms one of the most reliable data for distinguishing the work done before and after the beginning of the fourteenth century, and for determining to what extent the Norman walls were patched or rebuilt. A door in the east end of the present library leads into a small cell, constructed in the wall, with an aperture into the transept, no doubt arranged for the *armarius* on duty to hear the service. Thirty-seven feet at the west end of this room as far as the first great buttress have at one time been screened off to form a smaller room, and the walls covered with plaster, which was removed and the partition taken down thirty or forty years ago, though traces of them may be seen. The roof also has been heightened on the inner side to allow of a greater slope. The bookcases are now arranged all round the walls, and are backed with a considerable quantity of oak paneling, very roughly erected, and patched with deal. This was in all probability made to go round the chapter house when the books were placed there on the recommendation of Prebendary Hopkins, about 1700, and removed to the position it now occupies when the books were restored to their present situation about 1866.

It is generally safe, in considering the arrangements of a monastery, to conclude that restorations or rebuildings were made on the lines of the old, except where special circumstances had grown up to necessitate fresh departures. On this supposition we may conclude that the large aumbries still existing in the fourteenth-century work of the cloister were constructed to replace others in the earlier cloister, made to obviate in their time the disadvantage of the long flight of steps up to the library, just as, in later days, that is, about 1700, the books were removed into the chapter house on the ground floor, so as to make them more accessible than in their older depository.[a] There is evidence in the accounts

[a] From the accounts for work done in the cathedral restoration of 1661-2, the library was then in its original place over the south aisle.

of Prior Moore (1518-35) that the priory inventories, journals, account books, and service books were kept in the cloister aumbries, and as the cloister was, at least after its rebuilding in 1372, the *scriptorium* of the priory, it is a fair supposition that these cloister aumbries were also used for ordinary books in current use for copying or reading.[a]

If the above conclusions are correct, then the library from the twelfth to the end of the fourteenth century was housed chiefly in a room on an upper floor, over the south aisle, at the extreme west of the cathedral church, and partly in aumbries in the cloister.

The collection of volumes must have been a considerable one. There are 283 volumes still remaining which date from the eleventh to the sixteenth century, and sixty-six which formerly belonged to Worcester are in existence in other libraries in England. This makes a total of 349 now existing. Of this number a very few have been added since the dissolution of the priory. A thorough search would doubtless bring to light several others formerly belonging. To estimate the original total there must be added a large number of service books, which were generally the best written and illuminated, and so most liable to spoliation and dispersion, and a number which it is impossible to conjecture which have been either wantonly destroyed at different times or have perished through decay.

Of the 283 volumes which now remain in manuscript, only a few seem ever to have belonged to other religious houses and to have been added since mediæval times.[b] The great majority are of the fourteenth century. The earlier books, that is of the tenth to the thirteenth centuries, are for the most part collections of Homilies of the Fathers in Latin, including many of English writers such as Bede and Anselm. Another group written in Anglo-Saxon, many of which were left to Corpus Christi College, Cambridge, by Archbishop Parker, is made up of miscellaneous collections of Canons, Constitutions, Creeds, etc. and the Anglo-Saxon Homilies of Lupus, Aelfric, and others. Perhaps the most interesting early Worcester books now existing are the copy of Gregory's "Pastoral Care" (Hatton, 20) and a copy of Gregory's "Dialogues" (Hatton, 76), both apparently autographs of Werefrith, bishop of Worcester 873-915? and written for King Alfred. The "Pastoral Care" has the Worcester inscription on the first page, and the "Dialogues" begins with the celebrated preface of Alfred.

[a] See on pp. 168 and 414 of Noake's *Monastery and Cathedral of Worcester*. 1866.

[b] There are several formerly belonging to the Franciscans at Worcester, and one from the Priory of St. Dogmael, in Pembrokeshire (Fol. 150).

The Worcester copy of Florence of Worcester's Chronicle, which is contemporary with Florence, still exists (Corpus C. C. Oxon, 157), and two beautifully written manuscripts, apparently autographs of Prior Senatus (1189-1196) are preserved; the one a copy of the Vulgate (C. C. C. C. 48), the other of the Evangelists. (Bib. Bodl. Oxon. Rawl. G. 168.)

Possibly also a fine *Legenda Sanctorum*, now at Durham, may be an autograph of Senatus (B. 4, 39). Of twelfth-century manuscripts should also be mentioned the Commentary of Vacarius on Justinian, said to be the only copy of this work in England (Worcester Cathedral MS. Fol. 24). There is also of the twelfth or early thirteenth century an interesting group of early Latin translations of the works of the Arabian School of Medicine, Constantine of Monte Cassino, Isaac, Joanitius (Honein ibn Ishak el Ibadi), and others (Fol. 70, 85; Q° 39, 40, 41). It may be conjectured that of these, three (Q° 39, 40, and 41) were introduced by Mauger, bishop here 1200-14, who was some time physician to King Richard, and would have been interested in the study of medicine. There are early copies also of the *Liber Regalis* of Ali ibn el Abbas and of the *Almansor* of Abu Bakr Mahommed ibn Zakariya el Rhazi, which two books were popularly known to the mediæval medical student, distressed doubtless by the unaccustomed syllables, as *Haly* and *Razes*.

The books of the thirteenth century are not numerous, but among them should be mentioned the unique Worcester Service Book (Fol. 160), a combination of Processioner, Antiphoner, Kalendar, Psalter, Litany, Hymnal, Collects, *Sanctorale*, *Dirige*, and *Missale* according to the Worcester use. There is also a good group of books of Canon and Civil Law, chiefly Gratian's *Decretum*, with commentaries on it, and Justinian and his commentators. They have the characteristics of being as a rule particularly well written, with wide margins, and for the most part have been very little used.[a]

In the fourteenth century, to which the majority of the books belong, the influence of university life is largely felt. Many of the Benedictine houses had a house for their own students at Oxford or Cambridge, or at least a share in one. The Worcester students went chiefly to Gloucester Hall, now Worcester College. There they learned the art of writing after the newer models; they became authors, and added to the library by bringing home their books of study for their degrees.

[a] In the Cathedral Library of Hereford there is a similar group of works of canon and civil law which are much annotated and have been well used.

The monastic custom in later days of making entries on the fly-leaves of books as to their cost and of the succession of ownership is well known. In many of the Worcester books, in spite of careless rebinding, these entries remain. But even with their assistance it is impossible to determine which were written in the Worcester monastery or by the monks themselves, and which were purchased.

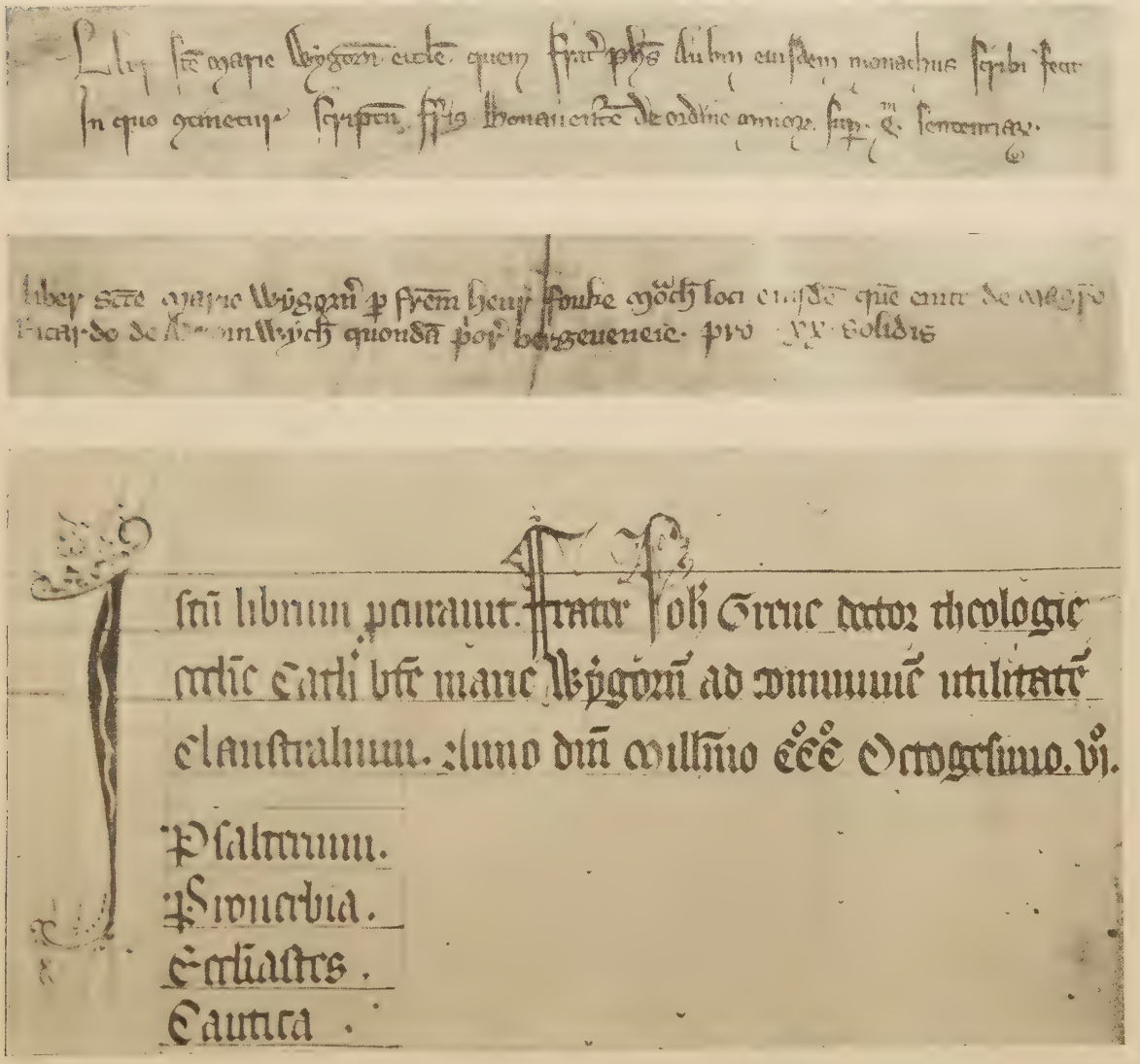


Fig. 1. Titles from MSS. in the Worcester Cathedral Library.

The common form of entry is, for instance, *Liber Sancte Marie Wygorniensis per fratres Thomam de Sedgesber' et Johannem de Wyke* (Fol. 37). Seggesberrow is

called in 1299 in the register of the prior and convent a "monk" of Worcester (Sede Vacante Reg.), yet he possessed books, and at his death at Rome a proctor was appointed to take possession of them (Annales Mon.). John de Wyke, whose name is also in the inscription, was a leading monk and prior, 1301-17. The meaning of the *per* is that the books were introduced to the monastery through the means of the particular monks mentioned, and not that they were the scribes. Again, at the end of another volume (Q° 42) is the inscription *Liber Sancte Marie Wygorniensis per istos undecem*, and a list of local monks is given, of whom John de Wyke is one, with a number opposite each name. It might be supposed that these were eleven scribes who had conjointly written the book, but the handwriting is either the same all through the volume, or so much alike that the difference between the eleven cannot be distinguished. Moreover, the total of the numbers in the list opposite the names of the monks is only 235, and there are 377 folios (counting the *tabula*) in the volume, so it may be concluded that the eleven contributed in different proportions to the purchase of the book, rather than that it was written by them.

Another similar entry is *Liber Sanctæ Marie*, etc. *per fratrem Henricum Fouke ex dono Ranulfi de Catthorpe*. In this case the *per* evidently means that the volume was acquired in Henry Fouke's time.

There is further evidence in these entries that a book was bought, not written, in that the price is often attached. In one (fol. 69), bound it is true in a style uncommon in Worcester books, there are some entries as to other books being lent, which suggests that it was bought second-hand from an Oxford *stationarius* who was in the habit of hiring out books for the schools, and that it was previously used by him to note his business transactions.

If this interpretation of *per* be correct, it greatly reduces the number of books written in the priory (exclusive of accounts, memoranda, etc.) after the twelfth century. The Worcester priory never seems to have had in its later days a large *scriptorium* such as St. Albans had, or possibly as the neighbouring abbey of Evesham, where the *scriptorium* was endowed; but the following endowment deed shows that an impetus was given to literary work at Worcester in the early fourteenth century. It is an appropriation by Bishop Walter (Maydenstone) of the church of Tibberton to the Precentory, on the ground "quod officium precentorie in Ecclesia nostra Cathedrali supra dicta propter sui exilitatem opera dicto officio incumbencia tam in librorum novorum scriptura quam antiquorum reparacione et emendacione Clericorumque dicto officio deservencium exhibitione (Equm quoque ac famulum propter negocia dicta Ecclesie expedienda adinvenire tenetur ex

consuetudine hactenus approbata) nec non in multis aliis rebus ipsi officio necessariis consistencia sustinere non valebat quovis modo."[a] (Fladbury 19 March.)

Most of this endowment may have been intended and used for materials for the registers, account rolls, and legal documents, but soon afterwards a good number of books were added; at least eight through Henry Fouke, who was professed in 1302 and a member of the Chapter in 1338, and probably *armarius*, and some others through or by Richard of Bromwich and John of Dumbleton, both Oxford graduates and members of the Cathedral Chapter 1302-1340 or 1350. Some of these are autographs, and are written in a rough current hand, not the common charter writing, but one which has the appearance of a hand trained in the monastic school, but transformed by the necessity of writing quickly.

The books of the mediæval library are not in any sense fancy productions. There are no illuminations, and only an occasional good initial or border is introduced to relieve the dull usefulness. They are essentially books made to be read and to last. The ornate and beautiful books of hours and mass books which were made for the rich and the pleasure of the devout never seem to have found much place among the Worcester Benedictines, and those that did have all disappeared. The writing is always in black with occasional rubrics, and the initials always in red and blue with scarcely any gold. Green is used in the earlier MSS., but not in the later, though the severe simplicity of the latter is sometimes softened by curious designs in penwork filling in and proceeding from the initials, and often the writing of first words is purposely fanciful. Only in a few of the more elaborate are figures of what may be called the combination animals which defy natural history, and which the illuminator often appears to have invented at the moment to suit the exigencies of the vellum or the space to be occupied.

Half the books or more were rebound and catalogued in the fifteenth century. This may be determined by the lettering of the labels on the back covers. Some were rebound before then, as is shown by the following priory accounts taken from a roll of the time of Richard II.:[b]

> In iii pellibus ovinis pro bibliis in claustro iiiid.
> It. succentori pro ligatura magni libri in choro. xxd.

About 155 old bindings, mostly of the fifteenth century or earlier, remain on the books in various stages of decay. Some few have scarcely felt the effects of

[a] *Sic.* The Latin is difficult and the text probably corrupt. Liber Pensionum, f. 31, A.D. 1314-15. Hist. MSS. Comm. Rep. 1895. Transcription by Mr. R. L. Poole.

[b] From Noake's *Monastery and Cathedral of Worcester.*

time, and others have but a small portion of rotten and worm-eaten board remaining. Some again, of which the binding had entirely gone, have been carefully rebound within the last few years in pig or calf skin, and many others are badly in need of the same treatment.

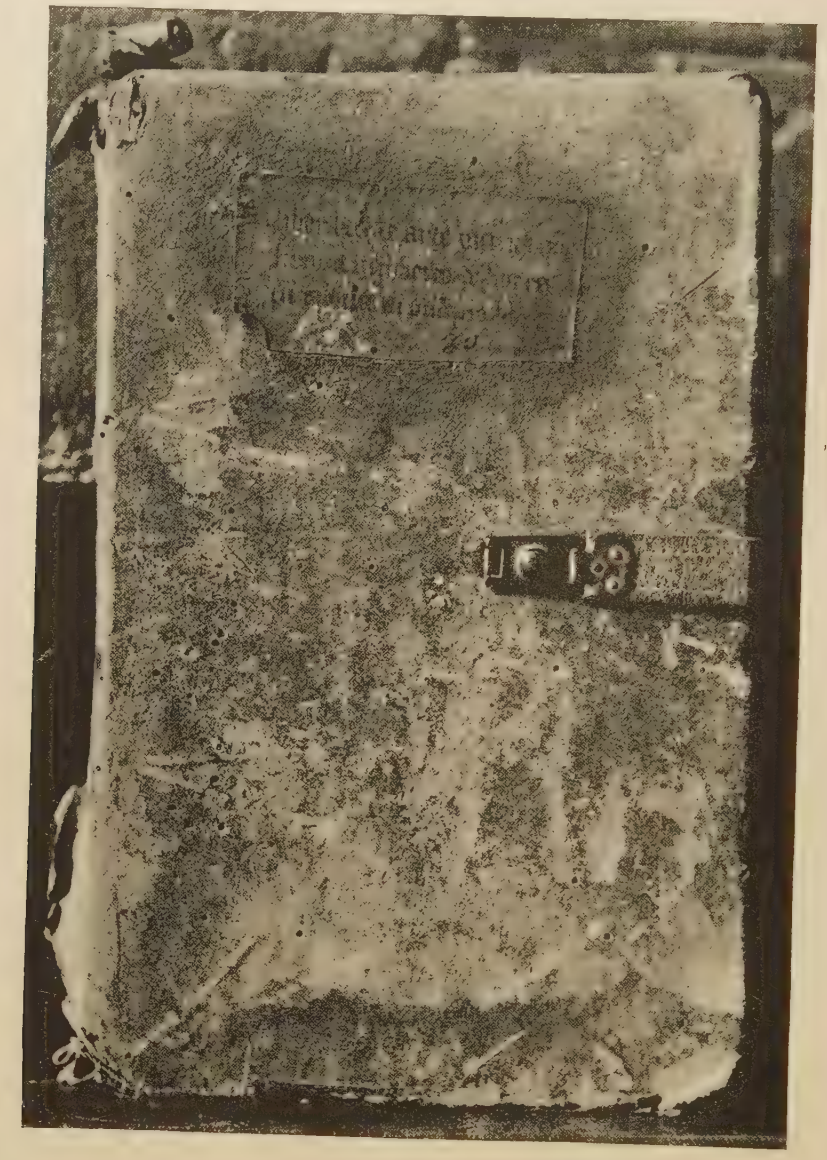


Fig. 2. A typical binding in the Worcester Cathedral Library.

The typical Worcester book is worth describing. (Fig. 2.) It is essentially a home production. The sheep of the farms provided the cover, the oak trees

furnished the boards. The quires of vellum are sewn with hemp on to ligatures of hide, the ends of which are taken down through holes in the oak boards, brought up again an inch further on and finished in a neat knot. The ligature is let into the board on both sides so as to provide a smooth surface for the covering skin. A stiffening of plaited hemp is also worked on the upper and lower edges of the back. The whole is then covered with white sheepskin. A strap is riveted with an iron stud on to one front edge of the cover, carrying a brass clasp, which fits on to an iron pin set in a small brass plate about the middle of the reverse cover. Some of these clasps are preserved and are often chased with some care. A vellum label is then stuck outside the last cover with the title of the book. This is the usual type, of which of course there are many small variations. The whole production is most workmanlike and durable, as is proved by the fact that some of these bindings are still supple and in good order after four or five hundred years of wear, dust, neglect, and other destructive influences.

Of the fifteenth-century books few are of special interest. There is less of the formal monastic hand and more of the books for the Oxford schools, some being no more than lecture note-books. A few of this century are on paper instead of vellum, and some are bound in stamped leather bindings.

The language of the library as it is now is almost entirely Latin. The few Anglo-Saxon books were taken away, and most of them came into the hands of Archbishop Parker. No English MSS. remain but two or three glosses on the Psalms, two copies of Richard Rolle of Hampole, and a Wickliffe's New Testament arranged for lections according to the Sarum Kalendar, about 1450, finely illuminated. A few MSS. contain leaves or portions in French (Fol. 157, Q° 61, etc.), but Latin is the language almost universally used. Aristotle, Eusebius, Origen, and such other Greek writers were only known through a Latin medium.

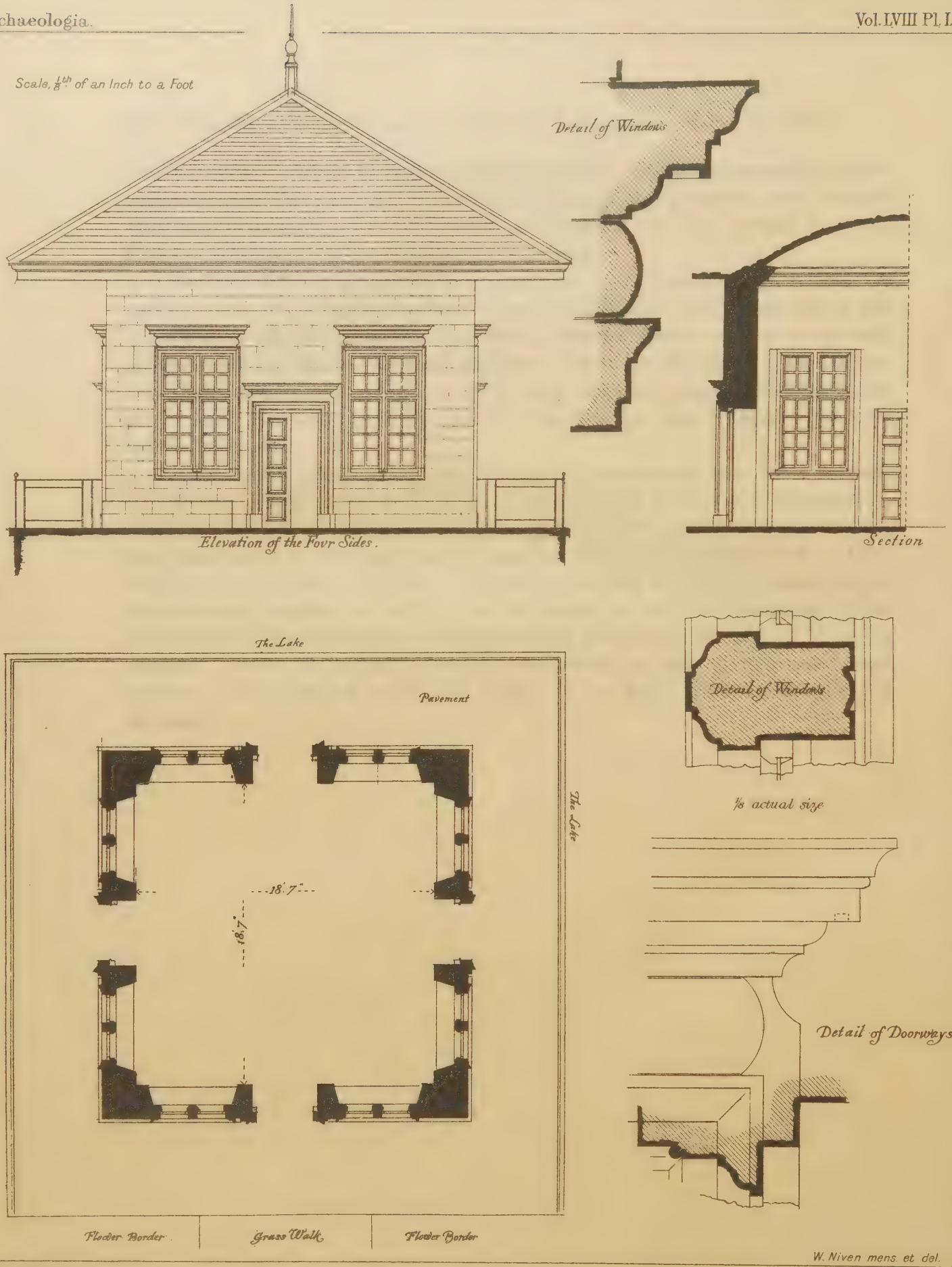
Commentaries on Peter Lombard's Sentences occupy many volumes. The philosophy of the schools, canon and civil law, the Fathers, and medicine are the chief subjects, and there are a good number of devotional books, such as glosses on the Psalms, the writings of St. Bernard of Clairvaux, and others, and treatises such as *De oculo morali* and those embodied under the name of *Specula*.

An expected liberality of mind is displayed in the collection, as the works of Averröes, who was represented by Orgagna in paintings in the Campo Santo at Pisa as being in Hell with Mahomet and Antichrist, are included. Possibly, however, these were "edited" to make them orthodox, as a very early Arian Commentary on St. Matthew was (Q 55), and passed under the name of

St. Chrysostom. What is perhaps more remarkable, almost contemporary copies of some of the Wycliffite writers, such as Repington and Alington, were brought back from Oxford and added to the monastic library. It is not certain, however, if any of these latter were controversial in character.

It would take too much time in a paper such as the present to enter into the question of how the books became dispersed at and after the dissolution of the monasteries. Modern research is discovering that many more vestiges of monastic libraries remain than was formerly supposed. So far as the internal value of the books goes, perhaps, when they are found, they bring a feeling of disappointment, attributable more to the narrowness of the field of inquiry than to lack of intellectual power.

The printing press has in fact perpetuated those which were most valuable as literature. A great many which were real works of art are still preserved in museums and private collections, and extensive and little explored depositories of more commonplace material exist in many of the public libraries and in their original homes in the cathedrals, which serve not only to provide matter for the historian and student, but which give an insight, as no other memorial of the past could do, into the literary attainments and methods of thought of the more educated section of mediæval communities, which in spite of reformation and revolution have proved to be the cradle of so much modern thought and discovery.



C.F.KELL & SON, LITH.

THE GARDEN-HOUSE, BECKETT HOUSE, SHRIVENHAM.

Published by the Society of Antiquaries of London, 1903.

APPENDIX.

The Garden-house at Beckett, Shrivenham, Berks.

12th December, 1901.—W. Niven, Esq., F.S.A., communicated the following Notes on the Garden-house at Beckett, Shrivenham:

In the interesting paper "On the Progress of Gardening," by Mr. Daines Barrington, read 13th June, 1782, and printed in vol. vii. of *Archaeologia*, he describes the garden-house at Beckett Park, the seat of his family, which has been variously called Summer-house, Fishing-house, and Banqueting-house, and his paper was illustrated by a small-scale plan and elevation of this building. He claimed interest for it on account of its being probably the first of such garden buildings, or, as he says, "expensive buildings in gardens," and because he believed it both by tradition and internal proofs to be a work of Inigo Jones. By way of supplement to his paper I venture to send the following notes from my own examination of the building, together with measured drawings of it (Plate LIII.) and photographs, which perhaps the Society may think worth adding to the Berkshire portfolio.

First, a few words in addition to Mr. Barrington's description. One is struck by the remarkably good preservation of the building, the excellence of the work, and (in measuring it) the precision with which it was set out. It is of two storeys, the lower being reached both from the garden and, by boat, from the lake, arched openings on the east side forming a convenient landing place as well as a place for keeping boating gear. This lower storey may of course have been intended for cellarage as Mr. Barrington says, but no doubt its main purpose was to carry the upper storey of which the floor coincided in level with a raised terrace which it terminated. Its position was perhaps novel, but the two-storied garden-house in connection with a terrace was by no means a novelty. The walls of the upper building are inside and out of freestone, and slabs of white marble take the place of window boards. Writing in 1782 Mr. Barrington says: "This banqueting-house is now in exactly the same plight as it was 150 years ago if the gilding of the window frames is excepted and the removal of a parapet wall" (probably a stone

balustrade) round three sides of the covered way. It has probably suffered no deterioration since that remark was made. No doubt this is largely due to the widely-projecting eaves, while the surrounding pavement saved it from the fatal embraces of ivy. Mr. Barrington thus puts the date of the building at about 1632, whether from actual knowledge or family tradition is not clear. Somewhere between this date and 1640 is where I should myself, judging by the work, have placed it, but there is of course a danger in estimating the date of Jones's work by the common standard. It is unfortunate that the writer did not ascertain and tell us the name of its builder. Sir William Essex, of Beckett, according to Lysons [a] sold the estate in 1621 to Roger Glover, Esquire, who in 1632 sold it to Sir Henry Marten, judge-advocate, who made a large fortune from the practice of his profession, and would seem the most likely of the three proprietors to have erected this building.

The claim that this was the earliest of such garden buildings of a substantial kind is hardly tenable. The two-storied garden-house dated from Tudor times. Logan's views, which show the gardens of the colleges at Oxford and Cambridge, indicate this. At Place House, Tenterden, are octagonal buildings of two storeys at either end of a raised terrace, which date from about the middle of the sixteenth century. At Melford Hall, Suffolk, is a great octagonal garden-house of two storeys, with eight gables and many pinnacles, pierced with (formerly) mullioned and transomed windows, a far more ambitious building than this, and an older one. The Parliamentary survey of the manor of Wimbledon taken in 1649 and printed in vol. x. of the *Archaeologia* describes in great detail some elaborate garden buildings, "garden, summer, or shadow-houses," a "banqueting-house" of two storeys, another of wood . . . "wainscotted round from the bottom to the roof" . . . "having 16 windows or covers of the same wainscot to open or shut at pleasure," etc. Wimbledon House was rebuilt by Sir Thomas Cecil in 1588, and probably the garden buildings were not much subsequent to this. The survey of Theobalds includes amongst other garden buildings "a summer or shaddow house standing in the middle of the garden, seated round and built turratt fashion and covered with slatt." Changing fashion and the landscape gardener must have destroyed many of such pleasant garden fancies since Mr. Barrington's day. But what might fairly have been claimed for this Beckett building was that it showed a great advance in style when compared with its predecessors.

Mr. Daines Barrington was no doubt right in attributing this building to

[a] *Magna Britannia, Berks.*

THE GARDEN-HOUSE, BECKETT HOUSE, SHRIVENHAM.

Published by the Society of Antiquaries of London, 1903.

CHEEK-PIECE OF A ROMAN HELMET FOUND NEAR SOUTH COLLINGHAM, NOTTS. ($\frac{1}{1}$)

Published by the Society of Antiquaries of London, 1903.

Inigo Jones. As is the case with nearly all except his largest public works there seems no actual documentary proof of his employment here; but there is a good deal of evidence. Coleshill, which since the eighteenth century has been attributed to him, and which surely could not have been the work of any one else, is only about three miles distant. Ashdown, a seat of the Craven family, known to be by Webb, Jones's pupil and relative, is only five or six miles away. The tradition in the family connecting the name of this architect with the summer-house is also evidence; but what is strange is that this writer makes no reference to the mansion itself at Beckett. In the library there is preserved a drawing of the old house, the present mansion dating only from some forty or fifty years ago. This drawing shows rather a shapeless general form with a monotonous repetition of windows closely resembling those of this garden-house, so closely as to suggest that both were by the same architect. The general design of this old house, if it could be said to have any, does not suggest Jones as its author, but it might well have been that he was employed to improve an existing building.

Since my drawing and notes were made this very charming little building has lately been illustrated, both in Messrs. Belcher and Macartney's *Later Renaissance Architecture in England*, and also in Messrs. Triggs and Tanner's *Some Works of Inigo Jones*. In both it is claimed as a work of his, but no evidence is given towards proving it to be so. By permission of the publisher, Mr. B. T. Batsford, the former illustration is reproduced in Plate LIV. from the original photograph.

Cheek-piece of a Roman Helmet.

12th February, 1903.—T. Cecil Woolley, Esq., exhibited a cheek-piece of a Roman helmet in embossed copper, found during excavations on the site of the Roman fort of *Crocolana*, near South Collingham, Notts.

The cheek-piece, which is represented full size in Plate LV., bears the figure of a woman standing by a horse, the bridle of which she holds with her left hand, while the other grasps a rope (?). Another rope seems to be disposed in the background as if to form a panel enclosing the figures.

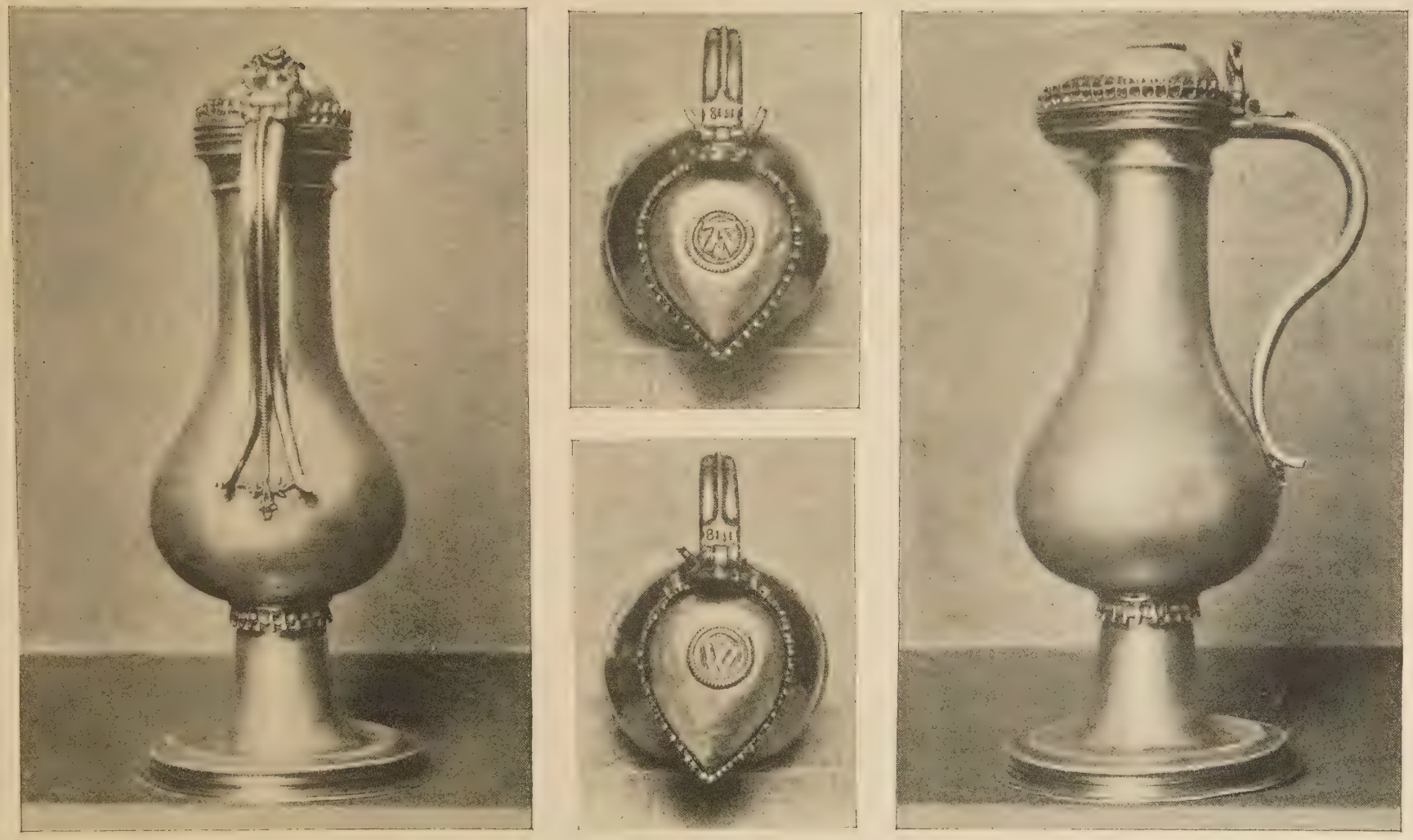
A pair of Silver Parcel-gilt Altar Cruets.

2nd April, 1903.—Max Rosenheim, Esq., F.S.A., exhibited a pair of silver parcel-gilt altar cruets. (Plate LVI.)

These interesting vessels are $6\frac{1}{2}$ inches high and identical in form in every way. Each has a long pear-shaped body, set upon a spreading foot, with handles made of two conjoined tubes, and kite-shaped lids. The lids are surrounded by gilded crestings by way of border, and furnished with thumb-pieces, also gilded, in form of a flower and leaves; on the hinges is engraved the date 1518. Each lid has also on top a small gilt medallion, with a beaded edge, enclosing, on a ground formerly enamelled, in the one case the letter W for *Vinum*, and in the other A for *Aqua*. The use of W for V is not unfrequent in German examples. The tubes forming the handles are conjoined for most of their length and have the joint covered by a beaded stalk, gilded. Near the bottom the tubes diverge and are slightly turned outwards, while the stalk continues and ends in a gilded leaf which is attached to the body of the cruet. The junction of body and foot is covered by a gilded cresting like that on the lids, but reversed. The edge of the foot is slightly moulded and gilded.

Under the foot are two hall-marks: (1) an eagle displayed, for the city of Luebeck; (2) the maker's mark, a star and another uncertain object.

The cruets were bought at Utrecht, but have apparently no other history.



A PAIR OF SILVER PARCEL-GILT ALTAR CRUETS MADE AT LUEBECK AND DATED 1518.

Published by the Society of Antiquaries of London, 1903.

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